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TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE STATE OF

NORTH CAROLINA.

FORTY-NINTH ANNUAL MEETING

HELD AT

WILMINGTON, N. C.

JUNE 10, 11 AND 12, 1902.

CHARLOTTE, N. C.
OSMOND L. BARRINGER
1902.

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ROSTER OF OFFICERS
OF THE
MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

	DATE	PLACE	PRESIDENT	VICE-PRESIDENTS	SECRETARY	TREASURER
	1849	Raleigh	F. J. Hill		W. H. McKee	
1	1850	"	Edmund Strudwick	F. J. Haywood.....C. E. Johnston J. E. Williamson.....W. G. Thomas	"	W. G. Hill
2	1851	"	Edmund Strudwick	C. E. Johnston	"	"
3	1852	Wilmington	J. E. Williamson	Thos. N. Cameron .....Wm. G. Hill Johnston B. Jones .....N. J. Pittman	E. B. Haywood	J. J. W. Tucker
4	1853	Fayetteville	"	W. G. Hill.....Johnston B. Jones J. B. G. Myers .....N. J. Pittman	W. W. Harris	Daniel Dupree
5	1854	Raleigh	J. H. Dickson	N. J. Pittman .....J. G. B. Myers J. Graham Tull.....A. D. McLean	S. S. Satchwell	"
6	1855	Salisbury	"	J. Graham Tull.....Owen Hadley A. D. McLean.....Hugh Kelly	"	J. B. Dunn
7	1856	Raleigh	C. E. Johnston	Marcellus Whitehead ....E. R. Gibson Johnston B. Jones .....O. F. Manson	"	"
8	1857	Edenton	"	Marcellus Whitehead ....O. F. Manson H. W. Faison .....E. T. Gibson	W. G. Thomas	"
9	1858	Newbern	W. H. McKee	Edward Warren.....C. W. Graham Caleb Winslow.....A. B. Pierce	"	"

10	1859	Statesville.....	W. H. McKee.....	Jas. G. Ramsay.....P. E. Hines..... J. R. Mercer.....W. T. Howard.....	W. G. Thomas.....	C. W. Graham
11	1860	Washington	N. J. Pittman.....	P. T. Henry.....R. H. Winborne..... M. Whitehead.....T. S. Leach.....	"	"
12	1861	Morganton	"	J. J. Summerell .....C. T. Murphy..... G. W. Hodges.....W. A. B. Norcom	"	"
13	1866	Raleigh	J. J. Summerell.....	.....	"	"
14	1867	Tarboro	W. G. Thomas	E. Burke Haywood.....R. H. Winborne..... W. L. Barrow .....J. W. Jones	S. S. Satchwell	"
15	1868	Warrenton	S. S. Satchwell.....	Hugh Kelly.....Geo. A. Foote..... Chas. J. O'Hagan.....J. H. Baker	Thos. F. Wood.....	J. W. Jones
16	1869	Salisbury.....	E. Burke Haywood.....	Thos. E. Wilson.....A. B. Pierce..... C. T. Murphy.....M. A. Locke.....	"	"
17	1870	Wilmington	C. J. O'Hagan.....	E. A. Anderson.....F. N. Luckey..... W. R. Sharpe .....R. L. Payne.....	"	"
18	1871	Raleigh	Hugh Kelly	D. N. Patterson.....R. C. Pearson..... J. B. Seavy.....G. L. Kirby.....	"	"
19	1872	Newbern	W. G. Hill	H. W. Faison .....R. I. Hicks ..... G. H. Macon.....W. A. B. Norcom....	Jas. McKee	"
20	1873	Statesville.....	M. Whitehead	W. T. Ennett .....William Little ..... Chas. Duffy.....T. P. German.....	"	H. T. Bahnson

21	1874	Charlotte.....	W. A. B. Norcom.....	J. B. Jones.....R. F. Lewis..... C. G. Cox.....J. L. Knight.....	Jas. McKee	H. T. Bahnson
22	1875	Wilson	J. W. Jones.....	Walter Debnam.....J. A. Gibson..... Wm. Little .....D. N. Patterson	"	"
23	1876	Fayetteville.....	Peter E. Hines.....	Jos. H. Baker.....G. G. Smith..... T. D. Haigh .....J. K. Hall	"	"
24	1877	Salem.....	Geo. A. Foote.....	J. K. Hall.....B. W. Robinson..... A. Holmes.....A. A. Hill.....	"	A. G. Carr
25	1878	Goldsboro.....	R. L. Payne.....	E. M. Rountree.....Richard Anderson..... S. B. Flowers.....L. A. Stith.....	L. J. Picot	"
26	1879	Greensboro	Chas. Duffy, Jr.....	J. A. Gibson.....Willis Allston ..... Jas. McKee.....A. A. Hill.....	"	"
27	1880	Wilmington	J. F. Shaffner.....	J. K. Hall.....W. C. McDuffie..... W. R. Wilson.....R. F. Lewis.....	"	"
28	1881	Asheville.....	R. B. Haywood.....	J. A. McRee.....W. H. Lilly..... R. H. Speight .....W. J. H. Bellamy ...	"	"
29	1882	Concord	Thos. F. Wood.....	T. J. Moore .....D. J. Cain ..... S. E. Evans .....Jno. McDonald.....	"	"
30	1883	Tarboro	J. K. Hall.....	A. W. Knox .....J. M. Hadley..... E. S. Foster .....Jno. Whitehead.....	"	"
31	1884	Raleigh	A. B. Pierce.....	F. W. Potter.....G. W. Graham ..... R. Dillard.....G. W. Long	"	"

32	1885	Durham	W. C. McDuffie.....	Jas. McKee.....T. E. Anderson ..... W. H. Whitehead.....A. G. Carr.....	W. C. Murphy.....	R. L. Payne, Jr.
33	1886	Newbern	Jos. Graham.....	H. T. Bahnson .....L. J. Picot..... J L. McMillan.....W. W. Faison.....	J. M. Baker.....	C. M. Poole
34	1887	Charlotte.....	H. T. Bahnson	G. G. Smith.....J. L. Nicholson ..... C. M. Poole.....H. B. Ferguson.....	"	"
35	1888	Fayetteville.....	T. D. Haigh	W. T. Ennett .....J. A. Dunn ..... T. E. Anderson	"	"
36	1889	Elizabeth City..	W. T. Ennett.....	W. J. Jones .....S. W. Stevenson ..... G. W. Long.....	"	"
37	1890	Oxford	G. G. Thomas.....	R. L. Payne, Jr.....Richard Dillard..... S. W. Booth.....	J. M. Hayes.....	"
38	1891	Asheville.....	R. H. Lewis.....	S. W. Battle.....J. L. Nicholson ..... W. H. Lilly.....	"	M. P. Perry
39	1892	Wilmington	W. T. Cheatham	T. S. Burbank.....J. W. Long ..... W. H. H. Cobb .....W. D. Hilliard.....	"	"
40	1893	Raleigh	J. W. McNeill.....	W. C. Galloway.....H. H. Harris ..... J. M. Hadley.....Thos Hill	R. D. Jewett.....	"
41	1894	Greensboro	W. H. H. Cobb.....	J. A. Hodges.....R. W. Tate ..... Willis Alston.....M. H. Fletcher.....	"	"
42	1895	Goldsboro.....	J. H. Tucker.....	J. H. Way .....W. H. Harrell..... O. McMullan.....C. A. Misenheimer....	"	"

43	1896	Winston Salem..	R. L. Payne.....	S. D. Booth .....J. P. Munroe..... J. A. Burroughs .....J. E. Grimsley.....	R. D. Jewett	M. P. Perry
44	1897	Morehead City..	P. L. Murphy	J. C. Walton .....A. A. Kent ..... M. R. Adams .....B. L. Long.....	"	"
45	1898	Charlotte.....	Francis Duffy.....	E. C. Register.....A. T. Cotton..... J. B. H. Knight .....F. H. Russell.....	"	"
46	1899	Asheville.....	L. J. Picot.....	I. W. Faison .....J. W. White ..... H. H. Dodson.....W. C. Brownson.....	Geo. W. Pressly....	G. T. Sikes
47	1900	Tarboro	Geo. W. Long	C. M. Poole.....James M. Parrott..... T. B. Williams.....W. D. Hilliard.....	"	"
48	1901	Durham.....	Julian M. Baker.....	M. H. Fletcher .....C. A. Julian..... D. A. Stanton.....E. M. Summerell.....	"	"
49	1902	Wilmington	Robt. S. Young.....	A. G. Carr.....E. D. Dixon Carroll.. I. M. Taylor .....J. M. Parrott.....	"	"

EIGHTH BOARD, 1902-1908.

M. H. FLETCHER.....Asheville
James M. Parrott..... Kinston
A. A. Kent .....Lenoir
F. H. Russell.....Wilmington
C. O'H. Laughinghouse.....Greenville
J. T. J. Battle.....Greensboro
Geo. W. Pressly.....Charlotte

The names of members who served as President appear in Caps; as Secretary in small caps.

OFFICERS AND COMMITTEES.

For 1902.

PRESIDENT.

ROB'T S. YOUNG, Concord.

VICE-PRESIDENTS.

A. G. CARR, Durham.
I. M. TAYLOR, Morganton.
E. D. DIXON CARROLL, Raleigh.
J. M. PARROTT, Kinston.

SECRETARY.

GEO. W. PRESSLY, Charlotte.

TREASURER.

G. T. SIKES, Grissom.

ORATOR.

JOHN C. RODMAN, Washington.

ESSAYIST.

EUG. B. GLENN, Asheville.

LEADER OF DEBATE.

A. A. KENT, Lenoir.

BOARD OF CENSORS.

H. W. LEWIS, Jackson, A. CHEATHAM, Durham,
OSCAR MCMULLAN, Elizabeth City.

LEGISLATIVE COMMITTEE.

R. H. LEWIS, Raleigh, S. W. STEVENSON,
ABNER ALEXANDER, Columbia. C. M. POOLE, Craven.
H. A. ROYSTER, Raleigh.

OBITUARY COMMITTEE.

E. G. MOORE, Elm City. JOHN M. MANNING, Durham.
J. A. BURROUGHS, Asheville.

OFFICERS AND COMMITTEES.

For 1903.

PRESIDENT.

A. W. KNOX, Raleigh.

VICE-PRESIDENTS.

E. G. MOORE, Elm City.
C. A. JULIAN, Thomasville.
W. W. MCKENZIE, Salisbury.
J. L. NICHOLSON, Richlands.

SECRETARY.

J. HOWELL WAY, Waynesville.

TREASURER.

G. T. SIKES, Grissom.

ORATOR.

J. H. MANNING, Chapel Hill.

ESSAYIST.

E. A. MOYE, Greenville.

LEADER OF DEBATE.

A. S. PENDLETON, Warrenton.

BOARD OF CENSORS.

FRANCIS DUFFY, Newbern.
K. P. BATTLE, JR., Raleigh.
W. H. WAKEFIELD, Charlotte.
W. P. WHITTINGTON, Asheville.
W. H. WHITEHEAD, Rocky Mount.

LEGISLATIVE COMMITTEE.

R. H. LEWIS, Raleigh,
P. L. MURPHY, Morganton,
T. E. ANDERSON, Statesville,
J. W. MCGEE, Jr., Raleigh.
J. F. HIGHSMITH, Fayetteville.

OBITUARY COMMITTEE.

B. K. HAYS, Oxford.
W. C. GALLOWAY, Wilmington.
J. W. JONES, Goldsboro.

MINUTES.

Wrightsville Beach, June 10th, 1902.

The forty-ninth annual meeting of the Medical Society of the State of North Carolina was called to order at twelve o'clock A. M., by Dr. Frank H. Russell, Chairman of the Committee on Arrangements.

The Rev. A. D. McClure opened the session with prayer.

The Hon. A. M. Waddell delivered the address of welcome, as follows:

Mr. President and Gentlemen of the Medical Society of the State of North Carolina:

I am very happy to have been assigned to the pleasant duty of welcoming this assembly of physicians and surgeons of North Carolina to the hospitalities of our people. Like other folks, each of us is always glad when the doctor comes and therefore we are many times more glad to have such a large assembly of doctors here, but we wish you to understand that the usual order is to be reversed, and that we are going to minister to you, instead of being ministered to by you, and we hope that the prescriptions which we give you will be at least more palatable than the ones we are in the habit of receiving at your hands. They certainly will be given in larger quantities and more often repeated, provided the recipient will follow the directions—and example—of those who have charge of them.

No intelligent man who has lived during the last fifty years needs to be told that medicine is a progressive science; he only has to remember what it was in his youth and recall what it is now. He only has to recall the doctor's "stuff" that was administered when he was a boy, and contrast it with the contents of a first-class modern drug store, and the old fashioned surgical appliances with the equipment of an up-to-date hospital, and the former attendance, however kind and affectionate it might have been, with the service now rendered by that newly developed wonder and comfort, the trained nurse. I never see one of those

white-capped, white robed ministers of humanity and civilization without recalling the witticism of Mr. Dooly, with which perhaps most of you are familiar. Discussing the doctor and Christian Scientists, he said:

"If the Christian Scientists had a little more science, and the doctors had a little more Christianity, it wouldn't make any difference what you called it—providin' you had a good nurse."

Now, gentlemen, the average layman has no just conception of the marvelous advancement of your science during the last century. As I said, he knows in a general way that there has been a great improvement in it, but how this improvement was accomplished—the history of its development he knows nothing whatever about, and cares nothing about. He sees the announcement of some remarkable surgical operation, and he accepts it as a matter of course, without giving any other thought to it than he gives to the automobile in which he rides or the electric lights on the streets. I say he has no just conception of the phenomenal advance of your profession—and I presume that you are glad that he has not. It would not be well for all to know everything that the doctor knows—and I think you yourselves would so prefer.

I am certainly not here for the purpose of giving advice. I am here for the purpose of welcoming you, as I do most heartily. It has been my fortune to address two graduating classes of medical colleges, once in Richmond and once in Charleston, and we had a heap of fun on those occasions, but you will not have any from me to-day.

There is one suggestion, however, which in all seriousness I would like to make to this body, which I can make with propriety, and that is this: Wouldn't it be wise for this body, as a body, to memorialize the legislature to repeal that provision of our law which requires all witnesses in court to kiss the book, excepting in cases where religious or conscientious scruples prevent them, in which case the witnesses are allowed to hold up their right hand? I am looking at it in a sanitary point of view. It is a dirty, unsanitary, uncleanly and really unnecessary method of swearing. Of course a man who would be bound by oath would be just as much bound by it if he placed his hand on the

book, or if he held up his hand. Now, results have been fatal from the diseases contracted from kissing the book. One such case actually is reported, as I have read myself in an English paper where a policeman contracted a fatal throat disease from it. I believe every intelligent physician will recognize the fact that it is always possibly dangerous to indulge in this practice. If you could see the creatures that I daily see kiss the book, you wouldn't want to touch it with a ten foot pole, much less kiss it.

Claiming, as I do, to be a Christian, I certainly have as much reverence for God's Word as contained in the Holy Scriptures as others, but I believe it is absolutely unnecessary to go through that form of kissing it, when placing the hand upon it will bind the conscience quite as much as kissing it, or going through any other form, and I ask the medical profession if they wouldn't consider the propriety of acting upon this suggestion, because I think they could, as a body of physicians and surgeons of North Carolina, do more to accomplish the desired results than any others, and I think that by doing so they would render an important service to humanity.

I wouldn't offend your good sense or violate the proprieties of this occasion by entering upon an encomium of your profession or by firing off a set speech at you. I simply repeat the words that I used at the beginning, that I am very happy to be here as the representative of my people to extend a most hearty and cordial welcome to you to the hospitalities of this community, and to express the hope that your deliberations here may be entirely harmonious and may result in the advancement of the interests of the high and noble profession to which you belong.

Dr. T. S. McMullan, of Hertford, made the following response:

Mr. President, ladies and gentlemen:

It is with great pleasure, and yet with some regret, that I arise to thank you, in behalf of the Medical Society of North Carolina, for your generous welcome. The pleasure comes because we know the depth and breadth of your hospitality, your far-famed kindness to the stranger that is within your gates; a hospitality that was inherited from your sires, that took root

when your beautiful city was a few log huts on the banks of the Cape Fear and which has broadened and spread like the leaves of a green bay tree. My regret is that I stand here in the place of another member of this Society to whom had been assigned this delightful privilege, and who would have voiced its sentiments in words far more pleasing than any of mine. The scholarly and beautiful words with which we have been greeted to-day, and the eloquent expressions that have come to us, impress us that men everywhere always take interest in our work and progress. That in us they seek, and not in vain, safety for themselves, wives and little ones; that to us they look, and on us they depend for freedom from pains and perils and sufferings and cling to us through earthly ills until they "pass over the river and rest under the shade of the trees."

The time and occasion is not one, Mr. President, to indulge in fulsome words. Our only function at this hour is to thank the profession and the people of Wilmington for the magnificence of their welcome; for their attention to every want; for their observance of everything that we might need; for the courteous proffer of every association and for their thoughtfulness in having us deliberate at this delightful summer home, surrounded by every comfort, on the sands of the mighty Atlantic, fanned by these glorious breezes from off its bosom, making delightful our physical comfort and within the roar of these whitecapped and awful billows, which lull us to sleep by night, and which by day are as an inspiration from the Almighty God himself.

So much of good has come out of Wilmington, Mr. President, so many noble men and women have lived and worked and lie dead under the green oak leaves, it is proper that from time to time public assemblies, such as this, should recall the days gone by. I would like to tell you, did time permit, of how in days of long ago, the sons and daughters of Wilmington, in the broad daylight, with no disguises, save the changeful lines of righteous wrath, resisted the British tyrany and hurled defiance at King George's throne; of how Cornelius Harnett, rugged old patriot that he was, great of heart and wisdom, and touched with the fire of liberty, of how this great Carolinean gathered together the brave and manly sons of the Cape Fear family and chased

the Red Coats from his native land. He wished no kingly pardon—a glorious man he was. Slave to no sect, he took no private road, but looked through Nature up to Nature's God. Of their strength of heart and of their children's courage who followed the Stars and Bars. Of their forbearance in the dark days. Of their long suffering in those days, patiently enduring till forbearance ceased to be a virture, and of how, under the leadership of a gallant veteran and a noble son, they took, in defense of the sanctity of their homes and their firesides, thinking naught but of the pure crimson blood of their saxon sires and the safety of their loved ones, that stand which has given to North Carolina an era of peace and wisdom and happiness which will endure forever. But, Mr. President, I will not further trespass. The most eloquent thought that can be offered is the simple statement from us to you that we knew what we would get when we came among you. We have partaken before of your liberal cheer, and before have been delighted with the smiles of your charming and beautiful women. Ten years has it been since we met with you, and I speak for us all when I say to you that the rememberance of that visit has been as the fragrance of a full blown rose.

Some of us that were with you have gone to their long home. Let us remember them and hope for them that

> "There was no moaning of the bar
> When they put out to sea."

We, that are here, are again glad to visit you, and whether it be our lot ever again to meet you under your own vine and fig tree, let me assure you that our memories will always be charged with recollections of your kindness, of your warm greetings, of the heartiness of your welcome, of the beautiful diction of your learned and far-famed townsmen, and not less than these, of the grace and beauty and liveliness of the fair daughters of the city by the sea.

After the calling of the roll the President delivered his address.

The following Committees were appointed:

Credential.—Drs. Russell, Fletcher, Cobb, Hays and Moore.

Finance.—Drs. W. H. Lilly, Poole, Parrott, Laughinghouse and McKenzie.

The following motion was made by Dr. G. G. Thomas:

That the able address of the President be referred to a committee of three, who will digest its valuable suggestions and report to this Society thereon—at this meeting, of course. Which was seconded and carried.

Dr. Thomas—I would like to say to the members of the Medical Society that the Carolina Yatch Club beg leave to extend to them the courtesy of their Club House, just below the hotel, and beg that you will make yourselves at home in their hammocks or rocking chairs, and if you have a girl, find a cozy corner. They will treat you with ice water and a bathing suit.

Dr. Lewis—I move that our Society pass a resolution cordially inviting the American Medical Association to meet in our State, at the City of Asheville, at their next meeting.

Dr. Way suggested the following amendment: That the Secretary of this body be authorized to transmit by telegram this invitation to the Secretary of the American Medical Association now in session.

Dr. Lewis—I accept the amendment.

By the President:—It is moved that the North Carolina Medical Society invite the American Medical Association to meet in the City of Asheville, this State, and that the Secretary of this Society be instructed to transmit this invitation by wire to the American Medical Association now in session at Saratoga Springs.

Carried.

Section on Practice of Medicine was called up and the chairman read his report on "Uric Acid Excess." Dr. C. A. Julian then read a paper on "So-called Dyspepsia and its Treatment."

Society then adjourned.

Called to order at 3:30 P. M.

Dr. Young announced the following committee on President's address:

G. G. Thomas, W. H. Whitehead and B. K. Hays.

The Finance Committee then made the following report which was adopted as read by Dr. W. H. Lilly:

REPORT OF COMMITTEE ON FINANCE.

Your Committee on Finance beg leave to report that they have examined the books and accounts of the Treasurer, and report as follows:

To balance on hand May 2, 1901	$ 136.78
June 9, 1902, amount collected from members	951.50
Total	$1,088.28

EXPENSES

June 10, Paid G. W. Pressly, Secretary	$125.00
" " " G. T. Sikes, Treasurer	100.00
" " " Sec. Incidental	106.19
" " " Stenographer	25.00
" " " For Typewriter	2.25
" " " Stationery, Printing, etc	16.49
" " " Sec. Am't Advanced on Transc'ns	71.25
" " " For Printing Transactions	300.00
Total	$746.18
June 10, To balance on hand	$342.10

We recommend the annual assessment of $2.00 per capita; that the salary of the Secretary be $125.00, and that of the Treasurer be $100.00.

We recommend that a stenographer be employed at a salary not to exceed $25.00.

The section on Anatomy and Surgery was called and Dr. James M. Parrott read a paper on "The Surgical Treatment of Chronic Ulcers," which was discussed by Dr. Bellamy.

Dr. H. A. Royster read a paper on the "Radical Cure of Hernia," which was discussed by Drs. Rodman, Flippin, Bass, Crowell, Parrott and Smoot.

Dr. Gwilym G. Davis, of Philadelphia, then read a paper on "The Knowledge of Anatomy from a Practical Standpoint," which was discussed by Drs. Royster, Galloway, Hays, Bass and Knox.

Dr. Pendleton then read a paper on several interesting cases in surgery, which was discussed by Dr. Crowell.

Dr. P. J. Macon read a paper on "The Management of Small-pox Outbreak." Discussed by Drs. Sikes, Pendleton, Lee Lewis, Glenn, Kent, Thomas and Galloway.

Dr. G. G. Thomas offered an amendment to the Constitution in regard to new members, but as there was objection it was withdrawn.

Invitations were received from Greensboro, Raleigh and Hot Springs asking the Society to meet there next year.

Society adjourned until 8:30 P. M.

Society called to order at 8:30 P. M.

The annual discussion was opened by Dr. A. A. Kent, of Lenoir, on the "Treatment of Typhoid Fever."

Drs. Smoot, Sikes, Rodman, Highsmith, Bass, Brown, Halsey, Cheatham, Knight, Nicholson, Macon, Whittington and Flippin took part in the discussion, which was very free and full.

Society then adjourned until 9:30 to-morrow morning.

Meeting called to order at 9:30 A. M.

Dr. S. E. Koonce read a paper on "Should the State extend her Public Charities." Discussed by Dr. Smoot.

Dr. T. S. McMullan offered the following resolution:

Whereas, it is the sense of this Society that the present method of administering the oath by kissing the book in Dristrict Courts is attended by some danger, be it

Resolved, that this Societv requests the next General Assembly of North Carolina to amend the law so as to provide a method not attended by any such risk.

Moved that this resolution be referred to Committee on Legislation.

Carried.

Dr. W. P. Ivey then read a paper on "The Mattison Method in Morphinism," which was discussed by Drs. Anderson, Whittington and Knight.

The Board of Medical Examiners then made their report through the Secretary, Dr. Way. The report was adopted.

Dr. J. L. Nicholson, as chairman of the section on Medical Jurisprudence and State Medicine, made his report, which was discussed by Drs. Duffy and Parrott.

The Obituary Committee through its chairman, Dr. E. G. Moore, made the following report:

Mr. President: Your committee appointed on obituary are glad to report the death of so few of the Society's membership during the year which has passed.

While the loss has been few in numbers, yet notable characters, most excellent representatives of the old school which is rapidly passing away, and shining examples of that age and system to which we all bow in humble reverence and profoundest respect, have quitted these scenes of earthly toil and joined that silent majority beyond the tomb. We mourn our loss, we drop upon their graves the flower of love, and shed upon their tombs the tear of sympathy.

Their lives were filled with deeds of noble charity, their labors were a blessing to humanity and a benediction for good. Hence they lived not in vain. Like a shock of corn fully ripe they have been gathered to their fathers. Full of years and honor they have passed to their reward and left us the rich heritage of lives devoted to their profession and to humanity.

In that resurrection morn may they receive the plaudit "well done thou good and faithful servants."

Love be to their memories and peace to their ashes.

IN MEMORIAM.

JOSEPH H. BAKER, M. D., TARBORO.

By P. E. HINES, M. D., Raleigh, N. C.

Dr. Baker, the son of Dr. Wm. S. Baker, was born in Edgecombe County on December 25, 1831, and died at his home in Tarboro on February 12, 1902. He was prepared to enter the University of North Carolina by teachers in Tarboro. He remained two or three years at the University, where he was very popular and highly esteemed by all the students who knew him.

After leaving the University he began the study of medicine, and after attending two courses of lectures in the Medical Department of the University of Pennsylvania he graduated in the spring of 1854.

Immediately after graduating he settled in Tarboro and began the practice of medicine, succeeding Dr. Joseph Lawrence, an

old and honored physician of that place. He has ever since, up to his last illness, been actively engaged in the practice of his profession.

He had a large and extensive practice, including many notable cases of surgery and obstetrics. He was the first surgeon in this country to diagnose and advocate an operation upon, if not the removal of the kidney. He took his patient to some distinguished surgeons in New York and Philadelphia and each refused to operate and the patient died after very great suffering.

In April, 1861, at the beginning of the late Confederate war, he volunteered in the Edgecombe Guards, afterwards Company A, First North Carolina Regiment of Volunteers, (the Bethel regiment.) When the regiment was organized he was appointed First Assistant Surgeon of the regiment, and commissioned on the 16th day of May, 1861.

The late Dr. J. G. Hardy, of Asheville, was appointed Second Assistant Surgeon and commissioned on the same date. Dr. P. E. Hines of Craven County, was appointed and commissioned Surgeon of the regiment on the same date. This regiment left Raleigh on May 21st, and after two days in Richmond, Va., was sent to Yorktown. In a few days after arrival there, Surgeon Hines was detached from the regiment and assigned to duty in charge of the general hospital. Dr. Baker then became the Surgeon in charge of the regiment with Dr. Hardy as assistant. They discharged their duty faithfully, skillfully and kindly. He returned home when the regiment was disbanded in November, 1861, upon the expiration of their time of enlistment. Dr. Baker suffered very much in health while on duty below Yorktown, and it took him years to recover. There was no truer Confederate soldier than Dr. Baker. He was a member of the Medical Society of North Carolina, and was elected Vice-President of the Society twice.

He held many offices of trust and honor. He was President of the County Board of Health. He had served as Alderman and was twice elected Mayor of his town. He was elected a member of the State Legislature in 1866-'67, and in 1868 he was

elected under the reconstruction act a delegate to the convention to form a constitution for the State.

Soon after his majority he joined the order of Odd Fellows. He was elected to various offices in the subordinate and Grand Lodges, and in 1870 was elected Grand Master of the Grand Lodge in North Carolina, and afterwards Represetative to the Grand Lodge of the United States.

He has held the offices of director and vice-president of banking and insurance, of building and loan, and agriculture and mechanical associations. He was a member of the American Legion of Honor.

The various positions of honor which have been conferred upon Dr. Baker serves to show the esteem in which he was held by those who knew him best. He had a kind, affectionate, loving and charitble heart; a genial, attractive, kindly disposition, which drew people to him and made them like and respect him. He was a very able and successful physician and business man; doing good and being useful to his fellow men during all the days of his life.

Dr. Baker had been twice married. First to Miss Susan A., daughter of Wm. Foxhall, by whom he has four sons living, second time to Miss Ida Manly, daughter of Governor Charles Manly, of Raleigh, from which marriage he had a daughter and a son. He was a devoted, loving husband and father.

One who knew him all his life says he "never heard him indulge in profanity, nor has anyone been found who has ever heard him use a profane or blasphemous word or epithet."

He was laid to rest from Calvary Church in its beautiful cemetery on Thursday, February the 13th, where he will ever rest in peace.

IN MEMORIAM.

DR. J. M. HADLEY, LA GRANGE, N. C.

Died at La Grange, North Carolina, on the 13th of December, 1901, Dr. Jacob M. Hadley, in the 67th year of his age, after a short illness of pneumonia. Thus has passed away a distinguished physician and one of the most useful and consistent laymen of the Methodist Protestant Church in North Carolina.

Of his walk in life it may be said that he was a rare example of modest worth, a skillful physician, performing the duties of his calling with sympathy and kindness, largely ministering to the afflicted in charity, and we trust, laying up abundantly in heaven those treasures which are to be more esteemed than gold and precious stones. The life of a practitioner with an extensive country practice is necessarily laborious, but Dr. Hadley never refused an appeal when he could alleviate suffering, no matter how inclement the weather, how tedious the journey, nor how precarious the compensation. Nor amid the multitude of his cases did he ever forget his home duties or his religious obligations, but found a delight in performing them to the best of his ability. Much interested in church work, he procured the erection of the M. P. Church building at La Grange, and contributed with great liberality to its support. He was influential in all that concerned it, and, although at great inconvenience, he would, when practicable, interrupt his daily work to attend his General and Annual Conferences. He attended the General Conference at Adrian, Mich., 1888, and in 1900 he attended the General Conference at Atlantic City. In the Annual Conferences for many a year he represented La Grange Circuit, and it was just after his return from the Conference at Henderson that he fell a victim to disease from exposure in inclement weather.

Not merely have the people of LaGrange and vicinity mourned his loss, but the sacrifices of his valuable life is widely deplored. In the field of his practice he was unusually esteemed and beloved, and the remembrance of this kindly and sympathetic physician will long remain among the people of Lenoir County to whom he ministered.

Dr. Hadley was of Quaker extraction. His great grandfather, Joshua Hadley, was a Quaker who came from South Hadley, Mass., and settled in Chatham County, N. C., before the Revolutionary war. His grandfather, Jacob Hadley, lived at Hadley's Mills, in Chatham county, and was a man of influence, being a prominent farmer and large mill owner. His father, William Penn Hadley, who was born in 1810, like his father and grandfather, carried on extensive milling operations. During his

long life, extending through more than four score years, he exerted a leading influence in his community, and was esteemed for his unswerving probity and high intelligence. He was blessed with ten children, worthily trained in virtue and excellence. Among these was Dr. Jacob M. Hadley, who, born on November 30, 1835, was educated at New Garden and Trinity College, and then taught school and studied medicine, graduating at the University of Pennsylvania 1860. In the fall of that year he married Miss Elizabeth E. Kirkpatrick, of Orange county, and made for himself a home in Craven county, where he began to practice his profession; but the war soon came on, and, with patriotic ardor, he together with three of his brothers, although of Quaker stock, promptly enlisted in the army raised in his native State. He served in a regiment commanded by Colonel Clark for the defence of Newbern, and upon the fall of that city, he was appointed Assistant Surgeon, and was assigned to the hospitals at Raleigh with Surgeons Bryan and Haywood. In the autumn of 1862 he was appointed Surgeon of the Fourth North Carolina troops, and after that shared the fortunes of that heroic regiment. On the retirement from Gettysburg he was left in charge of the wounded Confederates at Martinsburg, where, upon the withdrawal of the Southern troops, he and the wounded in his charge fell into the hands of the Federal forces. But he had given such careful attention to some Federal wounded that he was not only not interfered with, but the Federal authorities secured for him and the men he was attending excellent treatment. After three months' service within the Federal lines, during which time he gained the esteem and good will of the Federal commander and of the medical officers of the Federal forces, he was paroled and sent through the lines, and soon returned to his regiment. He was subsequently with the Fourth North Carolina Regiment on the bloody fields of the Wilderness and Spottsylvania, and through the protracted seige of Petersburg, at the battle of Hotchis Run and Farmville, and finally at Appomattox he was receiving wounded men as the last guns of the war were being fired. While on the field performing his duties he was often in deadly peril, but fortunately escaped with but a single slight wound. In 1867 he moved to

La Grange and began his life work there as the leading physician of that vicinity, and soon acquired an influence that grew with the passage of years, and for a quarter of a century he was the first citizen in influence and usefulness in that community. He was president of the medical society of his county, and his professional brethren throughou the State manifested their regard for him by selecting him as one of the representatives in the American Medical Association at the meeting at Washington City in May, 1891.

Dr. Hadley has always been indefatigable in good works, and sought to promote them not only through the Church and in private, but as a Mason, as an Odd Fellow, and as a member of the Knights of Honor and Patrons of Husbandry. Having lost his wife some years before, on April 28, 1897, he married Miss Eliza Josephine Wingfield, of Portsmouth, Va., a daughter of Major W. C. Wingfield, and a niece of Bishop Wingfield, of California, and this estimable lady and their little daughter Mary and Mr. George B. W. Hadley, a son by his first wife, survive him.

S. A. A.

DR. R. W. THOMAS, THOMASVILLE, N. C.

We have been unable to get the data and facts relative to the life work and death of Dr. Thomas. We are told that he reached the mature age of 84 years, and until two years prior to his death was an active practitioner at Thomasville, N. C.

He was a successful practitioner and enjoyed the esteem and confidence of his community in which he spent a long life of toil and usefulness. He died near the place of his birth, and left a host of relatives and friends to mourn his death.

E. G. MOORE,
J. M. MANNING,
J. A. BURROUGHS,
Committee.

The Society then went into the election of a new Board of Medical Examiners for six years. The following members were nominated:

Drs. W. T. Pate, James M. Parrott, George W. Pressly, A. A. Kent, M. H. Fletcher, C. M. Poole, B. K. Hays, W. W.

McKenzie, C. O'H. Laughinghouse, F. H. Russell, J. T. J. Battle and W. H. Harrell. After the first ballott the President announced that the following members were elected:

Drs. F. H. Russell, M. H. Fletcher, J. M. Parrott, C. O'H. Laughinghouse, A. A. Kent, J. T. J. Battle and G. W. Pressly.

The Society then adjourned until 3:30 P. M.

Society called to order at 3:30 P. M.

The conjoint session was then held with the State Board of Health. Dr. Geo. G. Thomas, of Wilmington, presiding.

The President made his address after which the Secretary made his report.

Dr. Walton offered the following resolution:

Resolved, That it is the opinion of this conjoint session of the Board of Health and Medical Society of North Carolina that the best interest of the State will be served by the appropriation by the General Assembly of a sum of money sufficient to conduct the bacteriological work now being done by the Department of Agriculture in Raleigh for the Board of Health.

Carried.

Dr. Tait Butler, the State Veterinarian, was introduced and made some remarks on bovine tuberculosis. After some general discussion of the subject the Conjoint Session adjourned.

The Society was called to order by the President, and Dr. Chas. Duffy, of Newbern, read a paper on "Inebriety, the Necessity of Legal Adjudication and Restraints of Inebriates."

Discussed by Drs. Murphy and Lewis.

Dr. Galloway introduced Dr. M. M. Stapler, of Macon, Ga., who read a paper on "Methods of Treating Deaf Mutes," and gave a demonstration of his apparatus on several patients.

Discussed by Drs. Lewis and Galloway.

The Society then went into election of officers for 1903. The following officers were elected:

President, A. W. Knox, Raleigh; Vice-Presidents, E. G. Moore, Elm City; C. A. Julian, Thomasville; W. W. McKenzie, Salisbury; J. L. Nicholson, Richlands; Secretary, J. Howell Way, Waynesville; Treasurer, G. T. Sikes, Grissom.

The place of meeting was then considered. Raleigh, Greensboro and Hot Springs, N. C., were put in nomination. Out of

56 votes Greensboro received 9, Raleigh 14 and Hot Springs 33. Hot Springs by a unanimous vote was then selected as the place of meeting in 1903.

The President announced the following committee on nominations:

W. W. McKenzie, D. J. Hill, W. H. H. Cobb, W. P. Ivey and J. C. Walton.

Dr. Geo. G. Thomas then read a paper on "Relief Departments in Railway Surgery," which was discussed by Dr. Walton.

Motion to adjourn.

Dr. Thomas—Before adjournment I would like to have about five minutes. You have a very modest member of this Society, Dr. George F. Lucas, who asks me to present this book to the Society, which he found among the papers of Dr. S. S. Satchwell. It consists in the records of the Medical Societies of North Carolina, especially in the year 1850 and the meeting of 1851, both of which meetings were held in the city of Raleigh. I notice in 1850 the Society offered the following premiums for the culture of the following medicinal articles in this State: For the largest quantity, not less than 10 lbs., of Fox Glove, $10; for the largest quantity, not less than 5 lbs., of Opium, $25 (to be exhibited at the next meeting of the Society). For the largest quantity, not less than 10 lbs. of Rhubarb (exhibited to the Society) in gold $30; for the largest quantity for Castor Oil, not less than 5 gallons, $10, etc.

There is one other thing I want to read—in 1851 the Society met in Raleigh—they can't complain; they have had it plenty of times. Dr. Jones and Dr. ——— read the report of the District of Orange, and it seems from the report that there had been a great deal of Typhoid Fever in Orange County.

Dr. Williamson said he was desirous to know something about the treatment of typhoid fever. The epidemic alluded to in the report, that prevailed in Orange in 1816, he remembered very well, for he was at school at that time in Orange, and the fatality was immense, so much so, that in one family they all died, and the neighbors burned the house. He was so glad to see from the report that at as early a day as 1816 the incident was narrated of the old lady refusing to let her family take medicine,

but threw down a bushel of ice, and told them to cool their bowels, was the best treatment that was adopted. As the result proved, all the family recovered.

I present this book in the name of Dr. George F. Lucas, a nephew of Dr. Satchwell.

It is moved that the thanks of the Society be returned to Dr. Lucas for the book, and that it be accepted with thanks.

According to the Constitution, the following members were elected Honorary Fellows: Dr. W. I. Royster, Raleigh; Dr. G. G. Thomas, Wilmington; Dr. Francis Duffy, Newbern.

The Society then adjourned until 8:30 P. M.

Meeting called to order at 8:30 P. M. by the President, and he announced that the committee charged with the duty of having the picture of Dr. O'Hagan made have completed their labors, and to-night that picture will be presented to the Society by the Committee through Dr. Richard H. Lewis.

Dr. Lewis said:

Mr. President and Fellow-members of the Society, Ladies and Gentlemen:

I feel greatly honored at having been selected by our President to serve as a substitute for the eloqunt Picot, who was to have made, on the part of the subscribers, the presentation to the Society of the portrait you see before you. While I feel my inability to meet the requirements of the occasion, it is a duty from which I could not turn away. My birth-place having been only eight miles from his home, his friendship, descending from my father and my older brother, was my treasured possession literally from my cradle until he passed away. This, is therefore, a grateful task. I would that I could perform it more acceptably. Dr. O'Hagan was a man of strkingly handsome and distinguished appearance, of strong and vigorous intellect, adorned with a scintilating wit and genial humor. This was highly developed by a thorough education, finished at the University of Dublin. He was familiar with the classics of Ancient Greek and Rome, and of our own language. With his silvery voice, this combination of native gifts and acquired accomplishments made him a forceful, attractive and graceful public speaker. As a conversationalist, he was simply charming. We have not forgotten how we were wont

to hang upon his words. But while these qualities excited our enthusiastic admiration, it was not for them we loved him most. It was for his warm and generous heart, which secured for him our unfailing affection. He was ever the friend of the weak and oppressed. It was the delight of his life to administer both to the sick and the needy. The impression that Dr. O'Hagan has left upon us is shown in part by this gift, and I now, therefore, present this picture of him to the Society of which he was for so many years the leading member and brightest ornament, and which in life he loved and served so well.

Dr. Thomas on behalf of the Society said:

Fellow-members of the North Carolina Medical Society, Ladies and Gentlemen, and President:

Who has not known the delight and refreshment of a mighty tree which furnishes a retreat to the weary traveler worn with the sun? Who in moments of sorrow or fatigue has not dreamed of the shadow of a great rock in a weary land? This man whose memory is still a sweet savor to us, was a sympathizing friend, a loving brother, an earnest helper to all whose appeals reached him. His devotion to right knew no bounds, and he espoused the cause of all those whose cause aroused the attention of his great mind and heart. He was the sweet refreshment of the mighty tree—the shadow of the great rock. It is meet therefore that we accept this pictured representative of the dead—and that we recall the days he spent among us—aspiring to the heights which he found and living up to the example his life has left us.

This Society receives this as the trustee of those whose affection for Dr. O'Hagan led them to make this offering in his memory and will place it at a fitting season among those whom this State honors in its library at its Capitol city, and there it will find fitting company.

This Society will not forget Charles James O'Hagan, our great Commoner, nor fail to cherish with becoming pride this tribute to his memory.

Dr. Rodman—As Treasurer of the O'Hagan Memorial Fund, I would like to make a few remarks.

The amount received by the O'Hagan Memorial fund	$148.40
Amount expended for the painting of the picture	100.00
For taking photographs by L. J. Pepo	20.00
For frame	19.50
Making a total of	139.50
Leaving a balance due to the credit of the O'Hagan Memorial Fund of	8.98

And now, sir, I would like to have instructions as to how the amount on hand is to be expended.

By the President—Inasmuch as this fund was contributed by a committee, not by the Society, I don't know how to advise.

Dr. Thomas—This picture is to be presented, as I had the pleasure to remark just now, to the State to be placed in its library at Raleigh.

As one of the donors of that fund, I take the liberty of suggesting that this balance and such other funds as may be necessary be put in the hands of the committee that has it in charge to defray the expenses to present the picture of our beloved dead to the State at such a time as the committee shall designate—which should be on some occasion when the representatives of the State will be in Raleigh.

I suggest to you that this committee be instructed to ask General M. W. Ransom to make the presentation speech on that occasion, and I make that as a motion.

Carried.

Dr. Thomas—My idea was that this balance and so much more as may be necessary be taken from the treasury of this Society to defray any expenses incident to this presentation.

By the President—That is a matter for the Society to settle.

So ordered.

By the President—Ladies and Gentlemen: I have the pleasure to-night of introducing Dr. John C. Rodman, annual orator, will now address us.

Oration by Dr. Rodman.

President—Ladies and Gentlemen: I now have the pleasure of introducing Dr. Uugene B. Glenn, of Asheville.

Annual essay read by Dr. Glenn.

Before adjournment, I desire to announce that the meeting will be called to order to-morrow morning at 8:30 instead of 10 o'clock.

The Nominating Committee made the following report which was adopted:

Orator—J. H. Manning, Chapel Hill.

Essayist—E. A. Moye, Greenville.

Leader of Debate—A. S. Pendleton, Warrenton.

Board of Censors—Francis Duffy, Newbern; W. H. Whitehead, Rocky Mount; K. P. Battle, Jr., Raleigh; W. P. Whittington, Asheville; W. H. Wakefield, Charlotte.

Legislative Committee—R. H. Lewis, Raleigh; T. E. Anderson, Statesville; P. L. Murphy, Morganton; J. W. McGee, Jr., Raleigh; J. F. Highsmith, Taylorsville.

Obituary Commmittee—B. K. Hays, Oxford; W. C. Galloway, Wilmington; J. W. Jones, Goldsboro.

Delegates to the American Medical Association—E. C. Laird, Hot Springs; Eug. B. Glenn, Asheville.

Five names were handed in by the committee, but as we are allowed only two delegates the two first names were chosen.

Delegates to the Virginia Medical Society—A. Cheatham, Durham; H. T. Bass, Tarboro; J. A. Williams, Reidsville.

Delegates to South Carolina Medical Society—J. M. Flippin, Salisbury; J. M. Blair, Monroe; A. J. Crowell, Charlotte.

The Society then adjourned until 8:30 A. M.

Society called to order at 8:30 A. M. Dr. A. J. Crowell read a paper on "Retention of Urine," which was discussed by Dr. Sikes.

Dr. J. Ernest Stokes then read a paper on "Cancer of the Uterus."

Dr. F. O. Rogers read a paper on the "The Urine" which was discussed by Dr. Kirby.

Dr. John B. Wright read a paper on "Creosote," discussed by Drs. Duffy, Kent, Robinson, Smoot and Highsmith.

Dr. B. R. Graham presented a paper on "The Spirit of Commercialism."

Dr. E. A. Moye read a paper on "Perineal Lacerations," discussed by Dr. Highsmith.

Dr. M. E. Street read a paper on "Good Roads," discussed by Drs. Crowell and Sikes.

Dr. Francis J. Kirby read a paper on "Appendicitis" which was discussed by Drs. Royster and Stokes.

Dr. Wm. A. Graham, of Durham, read a paper on "The Causes of Gyecologic Disease."

The committee on the President's Message reported in favor of the suggestions made, but inasmuch as the State Board of Health had agreed to look after the illegal practitioners in the State, they recommended that a committee be appointed to draft a constitution along the lines laid down by the American Medical Association and to report at the next meeting of the Society.

The President appointed the following committee on a new constitution: J. Howell Way, M. H. Fletcher, H. A. Royster, J. A. Burroughs, Geo. W. Pressly.

REPORT OF COMMITTEE ON CREDENTIALS.

The following names were acted on and recommended for membership:

J. E. Smoot ..... Concord
H. M. Bonner ..... Aurora
L. D. McPhail ..... Rose Hill
Lynn McIver ..... Sanford
L. T. Nicholson ..... Washington
L. C. Skinner ..... Greenville
H. T. Pope ..... Lumberton
J. P. Matheson ..... Taylorsville
G. E. Morton ..... Townsville
A. B. McQueen ..... Raeford
H. B. Maxwell ..... Whiteville
W. W. Washam ..... Davidson
C. E. Reitzel ..... Liberty
J. E. Cathell ..... Tyro Shops
C. B. Wiseman ..... Henrietta
E. M. Gayle ..... Warrenton
J. Graham ..... Hillsboro
K. G. Averitt ..... Cedar Creek

R. H. Bellamy ..... Wilmington
L. C. Skinner ..... Davidson
F. K. Cooke ..... Louisburg
J. W. McLean ..... Cameron
R. B. Miller ..... Rocky Mount
M. E. Street ..... Glendon
J. P. Munroe ..... Monroe
J. L. McMillan ..... Red Springs
S. M. Withers ..... Davidson
G. K. Collier ..... Wilmington
J. O. Matthews ..... Taylor's Bridge
D. B. Jordan ..... Cronly
F. E. Hartsell ..... Big Lick
Ira M. Hardy ..... Washington
W. W. Whittington ..... Bullhead
J. E. Nobles ..... Greenville
H. D. Walker ..... Creswell
W. L. Taylor ..... Stovall
L. K. Kirkpatrick ..... Blackstock, S. C.
Frank Roberts ..... Marshall
J. McK. Hunter ..... Cherryville
B. F. Burnes ..... Elm City
J. L. Ballon ..... Crumpler
J. M. Williams ..... Warsaw
G. H. Costner ..... Lincolnton
P. J. Thomas ..... Wilmington
S. H. von Ruck ..... Asheville
J. H. Shuford ..... Hickory
W. K. Lane ..... Goldsboro
Edwin Gladman ..... Southern Pines
L. C. Keerans ..... Charlotte
S. W. Shell ..... Lenoir
E. McD. Yount ..... Conover
G. S. Altman ..... Stonewall
Leavy Highsmith ..... Hope Mills
Henry Sloan ..... Ingold
L. C. Covington ..... Vanceboro
J. L. Hanes ..... Winston-Salemn

These applicants were duly elected members of the Society.

The new officers were now installed and in the absence of Dr. Knox the Society was turned over to C. A. Julian one of the vice-presidents. Dr. Julian then read the following appointments made by the President.

Practice.—P. J. Macon, Warrenton.

Med. Jurisprudence and State Med.—Benj. K. Hays, Oxford.

Anatomy and Surgery.—J. M. Flippin, Salisbury.

Railway Surgery.—P. J. Thomas, Wilmington.

Meteria Medica and Therapeutics.—S. E. Koonce, Pollocksville.

Obstetrics.—H. McK. Tucker, Raleigh.

Gynecology.—J. F. Highsmith, Fayetteville.

Chemistry and Physiology.—Frank Holmes, Clinton.

Pathology and Microscope.—S. H. von Ruck, Asheville.

Society then adjourned sine die.

GEO. W. PRESSLEY, Secretary. ROBT. S. YOUNG, President.

PRESIDENT'S ADDRESS.

ROBT. S. YOUNG, M. D., Concord, N. C.

Gentleman of the Medical Society of the State of North Carolina:

To have been chosen to preside over this session of the North Carolina Medical Society is an honor for which I am truly grateful. Here and now I desire to assure you of my cordial thanks for your kind partiality in electing me to this office. As your president, I shall be unable to measure up to the high standard set by my distinguished predecessors, but I yield to none in my earnest endeavor to maintain the excellence of our organization. As this session is likely to prove the largest meeting of our Society in many years it should, and I hope will, result in lasting benefit to all.

I congratulate you, gentlemen, upon the fact that we have again assembled in Wilmington. Wilmington has the reputation of knowing how to treat friend or foe. As early as 1765, a ship carrying stamped paper, was boarded in Wilmington harbor in broad daylight, by five undisguised citizens (Ashe and others) who threw the stamps over board and compelled the Royalist Stamp Master to take an oath that he would not attempt to enforce the odious tax. Why should we talk of the Boston Tea Party, when here in this city five patriots held a Stamp Party, eight years earlier, under the shining sun of Heaven and without any disguise whatever. Ten years ago we met here and were the recipients of that hospitality for which the people of Wilmington are proverbial, Since then, they have again proved themselves worthy sons of their illustrious sires of 1765. The "Wilmington Revolution" has become a part of the history of North Carolina. To-day we are assembled in a city where the proud feet of the Anglo-Saxon keep time to the music of the progress of the new century. As we walk these streets, we shall not escape the enthusiasm that comes of contact with the heroic. I congratulate you gentleman of the North Carolina Medical Society, that we meet together under such happy auspices. The gates of the city are opened wide in welcome to us. The clasp of manly hands and the smiles of fair women will make happy

memories of our sojourn in the "City by the Sea." While here, place yourselves in care of Nature's great physician, old Ocean; bathe your bodies in it's waters—the panacea of all ages—water that cures but does not inebriate. Let the balmy breezes of the Atlantic cool your brow; let the mermaid's song lull you to sleep and then perchance you may dream of a land where night calls never come and where all patients pay in advance.

It is our proud boast that the North Carolina Medical Society through the Board of Medical Examiners, has done excellent work in raising the standard required for admission to practice. The quack and charlatan have no place in North Carolina. This result has been brought about by the concientious and painstaking work of the men whom you have placed upon that Board. One of the most important duties that confronts the Society at this session will be the election of a new Board of Medical Examiners to serve for six years. I think it would be superfluous to comment at length upon the wisdom of this change back to the former method of electing the entire Board at one time for six years instead of having the personnel of the Board subject to the caprice of biennial elections. Let us put on guard at the portals of our profession, men who are fair but fearless, men who will see to it that no man lacking in skill or character shall be licensed. Let us elect men able in the science of healing rather than skilled in arts of the politician. The citizens of North Carolina who have charged us with this responsibility, demand that we exercise the greatest prudence in this important matter and from the abundance of available material, select our best men. In this way shall the high standard we have fixed, be maintained and in this way only. A more universal enforcement of the medical license law is necessary. Permit me to say, as has been repeatedly suggested before, that we should not expect local physicians to take the initiative in prosecuting persons practicing without license. Invariably the cry of persecution is raised and the quack receives consideration and sympathy to which he is not entitled. This Society should appoint a committee to act for the entire State, to bring these cases to the attention of the Solicitors of the State and to secure counsel where necessary, to prosecute these offenders.

The State Board of health continues to deserve the support of the profession and to merit the gratitude of the whole people in it's efforts to prevent the spread of disease. Yet it must be confessed that the sanitary progress of the State is not entirely satisfactory. This is due to no fault on the part of the Board of Health, but to the indifference of the individual members of the profession. In the matter of making prompt reports to the County Superintendents of Health, of all contagious diseases there is woeful neglect.

Physicians also fail to do their whole duty when they do not thoroughly impress upon the families in which these diseases are found, the utmost importance of a strict observance of quarantine regulations. The medical profession cannot afford to disregard the laws of our State which makes it a misdemeanor for physicians to fail to report contagious diseases, so as to prevent spread of epidemics.

The members of the profession have not profited by the offer of the Agriculturial Department to make free biological examinations. Lest the fact of this offer may have escaped the attention of some, I will take this opportunity to state that the Department offers to deposit with the County Superintendent of Health, mailing cases for specimens of sputum, specimens from suspected cases of diphtheria and specimens of blood in doubtful cases of fever. These specimens will be promptly examined and reported on, thus enabling you to determine the true nature of the disease. In the interest of scientific progress and in behalf of humanity, let us see to it that the Agricultural Department shall no longer have to make complaint that we do not appreciate these biological examinations. I am advised that if we do not show more appreciation of this offer, there is danger that it may be withdrawn.

At the St. Paul (1901) meeting of the American Medical Association a new Constitution and By-laws were adopted. The American Medical Association earnestly requests the co-operation of our Society in its organization. The officers of that Association asked me to bring the matter before you. I herewith transmit the correspondence and beg you to authorize a special committee to consider this subject and report during this meet-

ing. Being anxious to have our State represented at the first meeting of the House of Delegates of the American Medical Association which is now in session at Saratoga Springs, I have taken the liberty to appoint two eminent members of this Society as delegates. These gentlemen will act until their successors are elected.

I regret to announce that since our last meeting the Pittam Prize has been withdrawn by the heirs of the donor. This is greatly to be deplored. Let us hope that the day is not far distant when we shall have another prize to be awarded for original research.

Without trespassing futher upon your patience, I must ask your forbearance with my own imperfect qualification and your generous assistance in the discharge of the responsible duties you have imposed upon me.

ANNUAL ORATION.

By JOHN C. RODMAN, Washington, N. C.

It may perhaps seem to this intellectual and cultivated audience, composed of those whose daily life is sufficient evidence and guarantee of their belief; and of those who are in sympathy with our noble profession, that "medicine, a science," needs no argument from my hands to establish the truthfulness of such fact, but that it stands alone a self evident proposition in burning letters of relief from human suffering.

The thought that such could be doubted appaled me, and yet, in conversation some few months since, with a gentleman who at one time was a regular practitioner of medicine, but who is now classed by our fraternity as "irregular," and who professes to believe and practice in a school of osteopathy, he made use of the expression "if medicine be a science at all." Meditating over the remark, I began to think of the many other schools of ists and isms, with their cures by faith, and faith from cures (?), with their many thousands of followers, and my conclusions were that there are many yet to have suffering and regret, through the natural propensity of man, to believe in great promises and showy testimonials. So if my discourse appears dull and uninteresting, I beg of you to forbear, for it is from the medical profession that light must come from those who seeing, yet know not.

The medical profession must teach them that while there are many things still unknown and unaccounted for, yet there are established rules from which there can be no departure.

MEDICINE, A SCIENCE.

I know the earnest, conscientious, hard-working practitioner never doubts it, for his life would be a living lie.

The student of medicine fresh from home or college, plough or pastures green, when for the first time in the dissecting room, he feels a tremor of the nerves at the idea of carving and studying that piece of human clay; he at that time never doubts it.

The gray-headed sage, who has reached his alloted time of

three score and ten, after a laborious practice of half a century, reflecting over its trials and tribulations, his hours of pleasure and his days of labor, with a retrospective glance into the years that have passed, furrowing his brow with others' cares, making white the head that has often bowed down with the misfortunes of those entrusted to his care; when his memory touches here and there upon scenes of bygone years, and lingers at a bedside where there come blessed relief from acute pain, and restoration to health and happiness, all through the proper appreciation and application of scientific medical principles. Can anyone believe that he, with his ripened experience of fifty years, could for a moment doubt or loose faith.

"Men grown great through labors grand,
Are jewels polished by the Master's hand."

It is the experience of every thoughtful, medical man that there are certain scientific medical truths which are (conditions being the same), positively and absolutely incontrovertible; and that these truths or facts are thoroughly understood both collectively and individually, when dependent one upon another or alone, each having been analized by the best of minds, tested by years of time and proven with mathematical exactness. These axioms appear so simple in this age of medical and scientific enlightenment, that we are apt to take them as a matter of course, and do not realize that at one time they were entirely unknown, and unappreciated; that it took years of time and an immense amount of labor to elucidate them from the mass of empericism which surrounded their inception, and that upon them, and because of their absolute truthfulness, the whole foundation of scientific medicine rests.

In the scientific application of medical principles, we must remember always that man is a machine, fearfully and wonderfully made, planned, fashioned and completed by an All Wise and Omnipotent Being, and incomparable to the most delicate, intricate, complicated piece of mechanism ever devised by the hand of man, though guided, governed and controlled by the yet unsolved laws of Nature.

Death and decay are as natural and certain as birth and life. The budding green leaves of the stately oak, the delicate tints of the queenly lilly (comparable only to the cheek of a blushing

maiden), all depend for sustenance, life and beauty upon that which in man would cause destruction and decay. Thus is nature's cycle completed.

We have advanced much since the days of primitive medicine, and it is because we have thrown mystery and empericism to the winds and studied, first, man the machine; second, the internal and external, general and special influences upon it, and we have learned that when all parts of this wonderful machine are working together properly and in perfect harmony, that we have the ideal, moral, social and physical being, man.

We learn that there are many enemies as well as friends of this wonderful human organism of ours and that they produce deterioration, cause a departure from that which is normal. Instead of health and bouyant life, there was misery and disease, that, like the specters of old, their direful effects were felt, but they were not to be seen. The last medical era has brought to light the bacteriological origin of disease, and while it has revolutionized the pet theories of brilliant men, yet it has opened to the earnest seeker of medical truths a "vast field of unlimited vistas and boundless possibilities."

In every departure from the normal, and that constitutes disease, there must be a cause for such departure, and when the immediate and remote cause of any disease is known, then we are a long way toward the cure, or what is better, the prevention of such disease.

The great improvement in the microscope in recent years has been a valuable addition to our armanentarium in the study of the causation of disease, and it is from the scientific use of this instrument that we expect to formulate such rules as shall give us the best results toward that which should be our constant aim, the prevention of disease.

The medical profession of this, the twentieth century, need men who are earnest seekers after scientific medical truths and who will accept facts wherever found and from whatever source. There never has been such an unlimited field for scientific research, nor the posibility, nay, probability, of such brilliant attainments as is presented to the hard-working, earnest, persistent student of the yet unknown laws of life. As in the history of invention, the simplest things of practical importance, have proven to be of

the greatest benefit to mankind and of the greatest financial success to the inventor, so it is in the history of medical discoveries, that it is the practical observer, the thinkers, the earnest seekers after truth, that have conferred the greatest good upon humanity.

The observant Jenner, the man who lived with his eyes open, who asked himself the whys and wherefores of things, who studied, who thought, who reasoned. The immortal Jenner, the discoverer of vaccination, conferring the greatest boon upon mankind, when he deduced from his observation the simple fact that milk-maids did not contract smallpox. Yet, that observation has saved the lives of thousands upon thouands and has gained for that observer the thanks of millions yet to be. Is it always the student who from birth has had the greatest educational advantages, and who sits in his laboratory or study, surrounded by the costliest of scientific apparatus and with everything at his command to stimulate him to research—is it always he that makes the most important medical discovery or adds more to our store of knowledge? No, far from it, as medicine is founded on scientific principle, it must be either he that stumbles on a medical truth unknowingly and leaves it to be given to the world by some other observer, or it is the thinker, the reasoner, who, by analysis, is able to sift the grains of gold from the mass of ignorance and superstition, in which it is usually imbeded.

As representatives of the greatest profession on earth, whose foundations rests on the purest of scientific principle, can we afford to pass through our medical lives without, at least, making an honest attempt to add our jot or title in the shape of some hitherto unknown, simple though it may be, medical truth or fact?

If there is any truth in osteopathy, use it for what it is worth; if there be a particle of truth in Christian science, cull it out, and from its scientific use establish a principle if possible. Let us study medicine upon "principles as broad and as expansive as the blue arch of Heaven itself." Let us practice our profession from a plain which is high enough to recognize truth wherever found, whether gained from arduous labor in a twentieth century laboratory, with every aid and appliance that human ingenuity can devise; or, under the flickering rays of a pine torch in some lowly

cabin buried in the depths of the woods at the holy hour of midnight.

If it be scientific medical truth, grasp it at once and be not afraid to hold it upon the gaze of a critical world. Rest assured that if there really be medical truth in your observation, that even though the pendulum of medical opinion may swing to one or the other extreme, that in time it will rest at the exact spot representing its value to humanity.

In the conclusion of this (well known to myself) incomplete theme, allow me to say, that if my labor shall in any degree bring before the minds of my hearers how prone all of us are to believe unintentionally and without thinking in the old Latin maxim, "Post hoc ergo Propter hoc," after this therefore on account of this how especially conducive to our physical well being and temporary professional pride to believe in the aforesaid maxim when our patients all get well; but upon the other hand by its too ready acceptance how very likely we are to get into the so-called "ruts" of practice, which like the habitual use of a narcotic drug, is easy to acquire but hard to discontinue. If I shall not only present to you the faults acquired by an indulgence in mental inactivity subsequent to seeming professional success, but shall also show to you that justice to ourselves, to our patrons and to the future of the science, demand that we, not only know why our patients get well, but if they succumb, why they succumb, then I shall feel that my labor has not been in vain. Whilst we work let us realize that the foundation of medicine rests upon the purest of scientific principles and by the continued study of cause and effect its scope is greatly enlarged. Let us also realize that the *practice* of medicine is an art susceptible of the highest degree of cultivation to attain professional and financial success.

To those unfortunates whose necessity demands our study, our care, and our professional attention, and to those who are so fortunate as to have our thoughts, our best endeavor, and the scientific application of our medical knowledge, let me say, that if they would have the best results, let them recognize and acknowledge, that the doctor is monarch of the sick room and from his decision there can be no appeal.

Have confidence in your nurse, faith in your doctor, and trust in the God that has power over us all.

To those of you present who are neither men, doctors nor patients, I would have this to say: That you too, have your mission in life to fulfill in regard to the advancement of scientific medical knowledge.

Even now as it has been, since the beginning of the world, woman has exercised her influence in life. Can we now ask less, than that by her kindly sympathy, her friendly encouragement, her natural ambition, that she continue to stimulate and imbue the natures of medical men, with an honest desire to still further grant to humanity such relief from pain and misfortune that an All Wise and Omnipotent Being may see fit to allow.

THE DOCTOR PICTURED IN LITERATURE.

Annual Essay by EUG. B. GLENN, M. D., Asheville, N. C.

It is my present purpose to speak of the doctor as has been presented in poetry and prose by many of the masters in literature and giving us physicians an opportunity of seeing ourselves as others see us.

By some of our greatest authors and novelists we have been so caricatured that the author has shown that he has grasped the true meaning and importance of our calling. By others we have been crudely, coarsely and inaccurately painted so as to incite ridicule or incorrect abuse.

The oldest of the Hebrew poets has borne witness to the antiquity of the profession in his great dramatic poem, the Book of Job; for poor afflicted Job says to his partial friends that they are "forgers of lies and physicians of no value." But Jeremiah had a better opinion of the profession; for bewailing the impenitence of the Jews he cries: "Is there no balm in Gilead? Is there no physician there?" By this figure indicating the improvement produced by the presence of one of our craft.

In the "Ingoldsby Legends," a series of satirical stories in prose and verse, written by Richard Harris Basham under the pseudonym of Thos. Ingoldsby, Esq., and published about 1840, we have the story of the "Leech of Folkstone," which gives an amusing incident of a somewhat irascible English squire called upon by a somewhat timid leech, whom he greets gruffly with: "I will no more of your pharmacy; burn, burn,—gnaw, gnaw. I had as lief the foul fiend were in my gizzard as one of your drugs. Tell me in the devil's name what is the matter with me." Then comes the faltering question: "What says your other physicians?" "Dr. Phiz says it is wind, Dr. Fuz says it is water, and Dr. Buz says it is something between wind and water." "They are all of them wrong," said Erasmus Blackthorne, and then goes on to say glibly and smoothly: "It is ever the fate of science to be maligned by the ignorant and superstitious." This illustrates the tendency of the present, sometimes to berate the absent physician. No young physician

should be tempted thus to build up a cheap reputation by decrying his predecessors or contemptuously underestimating the abilities of his professional colleagues.

In the writings of Pilpay we have two fables—one, "A Religious Doctor," fable VI; the other, "An Ignorant Phyiscian," fable VIII. In the first we note this quotation: There are some that bear a grudge even to those that do them good." In the second he relates that "there was once, in a remote part of the East a man who was altogether devoid of knowledge and experience, yet presumed to call himself a physician,"—possibly the Munyon of India.

Where are the tribulations and difficulties of neurological practice and the impatience of the patient better illustrated than by Shakespeare in "Macbeth?" The Doctor says of Lady Macbeth:

Not so sick, my lord.
As she is troubled with thick-coming fancies
That keep her from her rest.
Macbeth: Cure her of that.
Cans't thou minister to a mind diseased,
Pluck from the memory a rooted sorrow,
Raze out the written troubles of the brain,
And with some sweet oblivious antedote
Cleanse the stuffed bosom of that perilous stuff
Which weighs upon the heart?
Doctor: Therein the patient
Must minister to himself.
Macbeth: Throw physic to the dogs:
I'll none of it.

One of the finest descriptions of the surgeon and his work, of students and their manners and methods, has been written by John Brown, a Scottish physician and author, in 'Rab and His Friends." In one graphic pen picture we have the amphitheatre —the surgeon a man of few words; the patient with her "unforgettable face," pale serious, lovely, delicate, sweet; her silvery smooth hair setting off her dark gray eyes; her trouble "some kind of an income of the breast" (income a disease without any known cause); the students rushing pell mell to secure the best

seats. "Don't think them heartless; they are neither better nor worse than you or I; they got over their professional horrors and into their proper work; and in them pity, as an emotion, ending in itself or at best in tears and a long drawn breath, lessens; while pity as a motive is quickened, and gains power and purpose. It is well for poor human nature that it is so." The operation without anesthesia, the still silent face of pain; the conclusion of the operation; later, in four days the evidence of sepsis; all has been told by the talented author.

Sir Walter Scott, in Dr. Gideon Gray gives us a fine specimen of those village doctors from whom he says Scotland reaps more benefit, and to whom she is perhaps more ungrateful than to any other class of men, excepting the schoolmasters. Such a rural man of medicine is day and night at the service of everyone who may command his assistance within a circle of forty miles of diameter, includings moors, mountains, rivers and lakes. But his was not the heart that grudged the labor which relieved human misery; and you will often find in him, even under an unpromising and blunt exterior, professional skill and enthusiasm, intelligence, humanity, courage and science.

In literature we can find illustrations of all types of physicians —the pompous physician, the hen-pecked physician, the timid man, the brutal, selfish type, and the superannuated, antiquated individual who lives upon his former reputation. Bulwer Lytton has described in "A Strange Story" a Dr. Lloyd, zoologist and physician, a tolerably good though never brilliant one, but who in later years rather aged than worked himself into that professional authority and station which it confers upon a thoroughly respectable man. Becoming involved in mesmerism, he lost prestige and his chief patient decided that he was cracked, and comments:

"Cracked poets may be all the better for being cracked; cracked doctors are always dangerous," and the young and ambitious Fenwick gets the practice of the community. Beware of fads or cerebral localized hypertrophies. There should be a well rounded development, a symetrical mental equipment.

When he was called in consultation with Lloyd, Fenwick says: "To me his diagnosis was shallow and his prescriptions obsolete.

Doubtless he thought I ought to have deferred to his seniority in years, but I held the doctrine which youth deems a truth and age a paradox; namely, that in science the young men are the practical elders, inasmuch as they are experienced in the latest experiences science has gathered up, while their seniors are cramped by the dogmas they were schooled to believe when the world was some decades the younger."

Euripedes said, 500 B. C., "Man's best possession is a sympathetic wife." The role played by the physician's wife and her influence over him for good or ill, has been well described by George Eliot and by Dickens. In the history of Dr. Lydgate in "Middlemarch," George Eliot with her masterly touch shows how a pretty, vain, but narrow woman may stand in the way of all her husband's nobler ambitions. Hear her words: "Lydgate, who had received a true vocation, whose intellectual passion predestines him to far-resonant action in the world of scientific research; Lydgate, against whom the temptation of the world and the devil would have been idle, is subdued by that third enemy of man, the world incarnated in the form of a creation (Rosamond) with feminine voice, swan-like throat, perfectly turned shoulders, exquisite curves of lip and eyelid, and, hidden behind these, the hardness of a little sordid soul."

Dickens, in "Bleak House," in the wife of Dr. Allan Woodcourt, paints a very different picture; the true, sympathetic wife, happy and proud of her husband's work. She says: "We are not rich in the bank, but we have quite enough. I never walk out with my husband but what I hear people bless him. I never go into a house of any degree but I hear his praises, or see them in grateful eyes. I never lie down at night but that I know that in the course of that day he has alleviated pain, and soothed some fellow-creature in the time of need. I know that from the beds of those who were past recovery thanks have often gone up in the last hour for his patient ministrations. Is not this to be rich?"

Turning now from fiction to fact, the finest type of the truly sympathetic doctor's wife is perhaps given by the biographer of Oliver Wendell Holmes: "For Dr. Homes she was an ideal—a comrade the most delightful, a helpmate the most useful,

whose abilities seemed to have been arranged by happy foresight for the express purpose of supplying his wants. She smoothed his way for him, removed annoyances from his path, did for him with her easy executive capacity a thousand things which he would otherwise have missed or have done with difficulty for himself; she protected him from distractions and bores and interruptions—in a word, she took care of him, and gave him every day the fullest and freest chance to be always at his best, and always able to do his work with cheerful surroundings. If in thus ordering all things with careful reference to the occupations and comfort of her husband, she often gave herself in sacrifice—as no doubt she did—she always did so with such amiable tact that the fruit of her devotion was enjoyed with no disquieting sense of what it had cost her."

The dualty of the human composition, the constant warring of the good and bad elements in the individual, the double role sometimes played by individuals of all professions or walks in life, are pictured most vividly and powerfully by the late R. L. Stevenson in his remarkable story of "Dr. Jekyl and Mr. Hyde."

Our American writers have created or described most admirable types of our fraternity, both in prose and poetry. Whitman in his unpoetical verse has given us the wound dresser, doubtless describing his personal experience as an army nurse:

"Bearing the bandages, water and sponge,
Straight and swift to my wounded I go,
Where they lie on the ground after the battle brought in,
Where their priceless blood reddens the grass, the ground,
Or to the rows of the hospital tent, or under the roof'd hospital,
To the long rows of cots up and down each side I return,
To each and all, one after another I draw near, not one do I miss.
An attendant follows holding a tray, he carried a refuse pail,
Soon to be filled with clotted rags and blood, emptied and filled again.
From the stump of the arm, the amputated hand,
I undo the clotted lint, remove slough, wash off the matter and blood.
Back on his pillow the soldier bends with curved neck and sidefalling head,
His eyes are closed, his face is pale, he dares not look on the bloody stump,
And has not yet looked on it.
I dross a wound in the side, deep, deep,
But a day or two more; for see the frame all wasted and shrinking,
And the yellow-blue countenance, see.
I dress the perf_rated shoulder, the foot with the bullet wound,

Cleanse the one with the gnawing and putrid gangrene, so sickening, so offensive,
While the attendant stands behind aside me holding the pail and tray.
I am faithful, I do not give out,
The fractured thigh, the knee, the wound in the abdomen,
These and more I dress with impassive hand,
(Yet deep in my breast a fire, a burning flame.)"

McClaren has given us that sympathetic picture of "A Doctor of the School"—Willie McClure of Drumtochty. "It was impossible for a doctor to earn even a modest competence from people of such scandalous health as those of Drumtochty, and so Maclure had to annex neighboring parishes. His house—little more than a cottage—stood at the head of the Glen, and from this base of operations he dominated the wild glen that broke the wall of the Grampians where the snow drifts were twelve feet deep in winter, and the only way of passage at times was the channel of the river; and the moorland district westward, and lands eastward toward Muirtown. He did his best for the need of every man, woman and child in this wild, straggling district year in and year out, in the snow and in the heat, and in the dark, and in the light, without rest, and without holiday, for forty years.

"He could ride faster, stay longer in the saddle, and had a firmer grip with his knees than anyone I ever met, and it was all for mercy's sake. When the reapers in the harvest saw a figure whirling past in a cloud of dust, or the family at the foot of the Glen in the night heard the rattle of a horse's hoof on the road, they knew it was the doctor, and without being conscious of it wished him God speed. There were no specialists in Drumtochty, so this man was to do everything as best he could, and as quickly. He was chest doctor and doctor for every other organ as well; he was accoucheur and surgeon; he was occulist and aurist; he was dentist and chloroformist, besides being chemist and druggist as well.

"He was a tall, gaunt, loosely made man without an ounce of superfluous flesh on his body, his face burned a dark brick color by constant exposure to the weather, red hair and beard turning gray, honest blue eyes that look you ever in the face, huge hands with wrist bones like the shank of a ham, and a voice that hurled

his salutation across two fields; he suggested the moor rather than the drawing-room. But what a clever hand it was in an operation—as delicate as a woman's; and what a kindly voice it was in an humble room where there was weeping beside a patient's bedside.

"His fees were pretty much what folks chose to give him, and he collected them once a year at Kildrummie Fair.

"As he had braved the storm and drifting snows and rising floods to visit the sick and dying, so his people came from all the Glen through the greatest snow of the century to his funeral; and of him it was said 'we have buried the remains of one who served this Glen with a devotion that has known no reserve, and a kindliness that never failed, for more than forty years. He will never be forgotten while one of us lives, and I pray that all doctors everywhere may share his spirit.' As a text for the cross over his grave the pastor of the parish chose, "Greater love hath no man than this that a man lay down his life for his friends." When someone said it was a peety he didna mak mair profession 'o releegion,' Lachlan Campbell, now old and feeble, replied "When William Maclure appears before the Judge, He will not be asking about his profession; for the doctor's judgment has been ready long ago; and it is a good judgement, and you and I will be happy men if we get the like of it. It is written in the gospel, but it is William Maclure that will not be expecting it. "Come ye blessed of My father * * * I was sick, and ye visited me."

Annual Discussion.

TREATMENT OF TYPHOID FEVER.

By A. A. KENT, Lenoir, N. C.

Of the long catagory of diseases that we have to combat, enteric fever is admitted to be one of the most serious in many respects. It seems in recent years that it has become more prevelent throughout the country. From every county in the State and from almost every town and community in every county comes up the report of its presence during a considerable part of every year. We are all familiar with it, and recall recent experiences in which our resources, energy and endurance have been severely taxed in its management. We are just now upon the eve of the season of its greatest prevalence. I can think of no topic of discussion to which we may devote an hour more profitably than in exchange of views on the treatment of enteric fever.

The subject naturally resolves itself into several minor topics and querries, any of which will afford opportunity for remarks. I shall not exhaust any one of them, but merely open the discussion by taking up such as seemed to me most important, leaving others entirely untouched. I shall then ask you, gentlemen, to make this annual discussion what it was designed to be, a full, free, off-hand discussion of a subject of general interest to us all. I cordially invite every one, who feels an impulse to do so, to "speak out in meeting." We are none of us so wise but that we may learn from one another. What you have to say may be just what I or some one else may need to know. You will not have done your part, if you fail to say it.

CAN TYPHOID FEVER BE ABORTED?

This is the first querry that I propound to you. I will give you my opinion and "the reason for the faith that is in me," and ask you for yours in exchange. I have seen a good many cases abort, or rather I may say terminate within fourteen days.

But there is no specific treatment that may be relied upon with any degree of certainty to do this. Granted that we have a specific toxemia as the cause, we should not expect specific results from the use of any medicine, like the definite action observed in a retort in the chemical laboratory. Some cases, like the summer shower, are quickly over; others, like the rainy day, are slow to recover; while yet others, under the same treatment, will terminate fatally. These different results are due in part to the degree of intensity of the specific infection. But are as much due to the *vis naturae* and healthy organism of the individual. One person has the ability to combat or to eliminate the toxemia from the system with facility and is but lightly affected. Another person is defective in these respects and is more seriously affected. One case has feeble digestion and a predisposition to gastritis, another has faulty organic structure of the gladular organs, another of the heart or lungs. All these and many other factors, to say nothing of environments, are to be taken into account, and play a more important part in the duration and ultimate termination of any case than the superiority of any one so-called treatment. When we remember that we have all this diversity of individuality to contend with, we are likely to get better results if we have a like diversity of remedial agents with which to combat the disease.

SPECIFIC MEDICATION.

Have we any specific remedies with which we may combat the germs of the disease in the system? I think we have such remedies. I am a firm believer in *intestinal antisepsis* and *elimination;* not according to the Woodbridge formula, but by means of such remedies, given at such times and in such cases as are best suited to the case in hand. My experience with the Woodbridge treatment in a limited number of cases was not very satisfactory. The *principle* of disenfection and elimination is correct, but I can adapt the treatment to the case in hand better than to try to follow the formula of another. The remedy that one practitioner gets the best results from may not be so efficient in the hands of another. We do not use them just alike. *Treatment* should be begun with a good dose of calomel, epsom salts or some vegetable cathartic sufficint to effectaally clear out

the alimentary tract. This should be repeated in smaller doses every second or third day, up to the latter part of the second week. After that time I use once a day enemata of warm water in which ten or fifteen drops of spirits of turpentine is dissolved. If this fails to keep the bowels open I still use some mild purgative. As an *intestinal antiseptic*, I usually give Listerine or Park-Davis' Euthymol, thirty drops in water every three hours. I have obtained satisfactory results from tincture of iodine and carbolic acid, one-half m. of each well diluted with water, every three hours. In some cases this combination disagrees with the stomach. I have then used carbolic acid alone and found it to agree better. I have sometimes used salol, 2 1-2 to 5 grains every three hours, but cannot say that I have been especially pleased with it. Sulpho-carbolate of zinc in 5 grain doses every four hours has given me very satisfactory results. I have used thymol in 5 grain doses, in capsules, every four hours with good results. I should not fail to make honorable mention of the time-honored remedy, spirits of turpentine, in this list. I regard it as an excellent remedy, given in 10 or 15 drop doses, in emulsion every four to six hours; but preferably used in the form of stupes over the abdomen. The system is in this way easily saturated, as it is readily absorbed. It is well for one to be familiar with the use and action of several of these remedies, for he will often find that the one he may begin with will not be well borne by the stomach, and he will have to change. After a few days use of *some one* of them, with mild purgatives, there is, as a rule, a general amelioration of all the symptoms. The temperature range will be considerably lowered; the tongue cleans and becomes moist; food taken and better digested; tympanites is prevented; diarrhoea checked; headache and delirium relieved; and the patient rests better. Whether or no any treatment is capable of effecting a germicidal influence upon the bacteriological forms implanted in the deep tissues throughout the organism is questionable. But it is easy to understand how it destroys, or renders less virulent the bacilli typhosis, so abundant in the alimentary tract. At the same time much of this toxic matter is being swept out by the purgatives and enemata before it is absorbed and carried into remote tissues. But after we have

done what we may with *Specific Treatment* there are a great many symptoms that must yet be treated upon the *expectant plan*.

Hydrotherapy should rank first in order along the line of expectant treatment. I cannot say much for the cold bath, as it is not easily carried out in general practice; nor would I dare to say much against it, in the face of the great array of statistics in its favor. I will ask some of those present, who have had more experience, how to carry it out safely, if it may be, in general practice, where the help of trained nurses is not be had, and where we cannot see our patients oftener than every second day. I use, with much comfort to my patients, frequently repeated sponge baths when the temperature range is high. I instruct the nurse to sponge the patient all over, as he lies in bed, several times a day with tepid water. If he is weak and much exhausted I have a little alchohol added to the water. This sponging conduces to the quiet and comfort of the patient, and helps to control the fever and delirium.

High temperature may be best controlled in hospital practice by systematic cold bathing, but in private practice we cannot carry it out very well, and must resort to other remedies. During the first and second weeks, one or two small doses, three to five grains each day of phenacetine, or acetanilid may be safely given, except in cases of weak heart. It quiets nervousness, relieves headache, and lowers the temperature for a few hours after each dose. It should not be kept up too long, and should never be given in cases of weak pulse, or where there is extreme exhauston. In such cases I have seen large doses, twenty to thirty drops, of tinct. of digitalis given every six to twelve hours, slow and strengthen the pulse, reduce the temperature range and relieve tremor and delirium. As digitalis is cumulative in its effect, the dose should be gradually reduced as its action is observed. If the temperature does not exceed one hundred and three degrees, especially when the morning remission is considerable, it does not *demand* any special antipyretic treatment. I have never been able to get antipyretic effects from the administration of quinine, except in cases of malarial complication. In some cases of prolonged high temperature and delirium a full dose of morphine or pulv. opium at bed-time, will

give a quiet night's sleep, slow and strengthen the pulse, and break the course of prolonged high fever.

Diarrhoea and Hemorrhage.—Where the patient is properly dieted and intestinal antiseptics used, diarrhoea is the exception and not the rule. I have found bismuth subnitrate, and some form of opium to be the best means of controlling it. I have had very poor results from the use of mineral and vegetable astringents, such as acetate of lead and tannic acid. Intestinal hemorrhage is a very grave sympton and demands a fuller consideration than I give to it at this time. It is best controlled by perfect quiet in bed, withholding food, and the administration of full doses of opium.

Stimulants as a rule are not needed, especially with young patients, whose previous health and habits have been good. Alcoholic stimulants should not be given us a matter of course, in a routine kind of way. In old people, and those of feeble consitution it should be given, but cautiously and systematically, provided it does not irritate the stomach. It should be administered in all cases where there is great general prostration, weak and irregular heart action, and pulmonary complications. Its effects should be observed closely, to make sure that it is not interferring with digestion, irritating the stomach, and helping to produce gastritis, a most serious complication. In ordinary cases, one-half oz. of whiskey or brandy every three hours is sufficient. In extreme cases a much larger amount should be given. I have found coffee to be a very good stimulant, especially in cases that are disposed to stupor. It may be given with milk, equal parts of each, thus combining stimulation and nourishment in a form that is easily digested and agrees well. It has the advantage of not having to be repeated at frequent intervals, the stimulating effect lasting from four to six hours. Where continued support of a weak fast heart is necessary, tincture of digitalis, ten to twenty drops every six hours is the most reliable remedy. It is slow in action, hence its use should not be delayed too long when indicated, and the dose should be reduced, or the interval lengthened, when the pulse has been sufficiently slowed and strengthened. It sometimes disagrees with the stomach, when it does the tincture of strophanthus may be given in its stead,

three to six drops every four to six hours. It is quicker in its action and of shorter duration, and not altogether so reliable an agent as digitalis. When a very powerful stimulant is needed, there is nothing equal to *strychnia* given hypodermically. It is a valuable tonic and stimulant, given *per orem*, where there is not much tendency to diarrhoea. It should be given in 1-60th to 1-30 grain doses every four hours. It is an invaluable remedy in the slow convalesence from typhoid fever.

Food should be systematically given every six hours during the first week of sickness—every three hours in day time and every four hours during the night of the second and third weeks. In grave cases where the amount taken at a time is small and prostration extreme, *pre-digested food* should be given every two hours. The amount of food should be regulated by the digestive powers of the individual. I am of the opinion that fever patients are often over-fed, and that much of the gastric indigestion, diarrhoea, tympanites and other bad symptoms are due to overfeeding. Milk is for many reasons the most reliable article of food. There are many ways in which it may be given. When it disagrees, as it will do in a considerable number of cases, I use soups and broth. The white of egg and water with a little wine or whiskey is usually very well borne and especially good in cases with very irritable stomach. No solid food should be administered during the sickness or for more than a week after the temperature has reached the normal. *Rectal alimentation* is of great help in cases of irritable stomach or much nausea and vomiting. A cleansing enema of warm soapy water should first be administered. After it is voided, a nutritive enemeta should be given. Inject high up and give no more than four or five ounces of some liquid food that may be easily absorbed, such as liquid peptones, soups, broth or white of egg and water. Milk is not good, as the lower bowel will not digest it. Stimulant and some kinds of medicines are easily given in this way, provided they are well diluted.

PROPHYLAXSIS AND DISINFECTANTS.

Remove from the sick room, if it can be done, all the unncessary furniture, carpets, rugs and bed clothing. Instruct the nurse to open the doors and windows several times a day and air

the room well, the patient being protected from draughts by proper covering. The bed linen and clothing used by the patient should be changed every second or third day, sometimes oftener. Too frequent changing disturbs the patient, causing a rise in temperature and sometimes other troublesome complications. The soiled linen, etc., should be dipped in a 1-1000 bichloride solution and then well boiled in washing.

All glasses, spoons, plates, cups, wash bowls, etc., used by the patient should be set apart for the sick room, or thoroughly disinfected in a strong carbolic acid (1-50) or bichloride solution (1-1000) before being used by other persons.

All discharges from the bowels, urine, vomited matter, etc., should be received into a vessel containing a strong disinfecting solution. I ordinarily provide the nurse with bichloride of mercury in 60 gr. powders, and instruct her to use one powder to a gallon of water, kept in a one or two gallon jug. This makes approximately a 1-1000 solution. Some of this solution is to be kept all the time in the chamber mug and other like receptacles. Disinfection of the room after the patient is convalescent is best done with formaldehyde gas. One pint to the 1000 cubic feet of space should be sprinkled in the room. The room should first be made as near air tight as possible and kept shut for twelve hours after the formaldehyde is sprinkled in it. Care should be taken that all closets opening into the sick room should be opened for this disinfection.

Good nursing is of paramount importance to both physician and patient. Many a physician has been robbed of his otherwise well-earned success by the ignorance or baseness of a bad nurse. It is no unusual occurrence for a bad turn in the patient's case to be caused by some act of officiousness on the part of some meddlesome neighbor. Good nursing means neatness, gentleness, cheerfulness, quietude, hopefulness, comfort, diminished suffering to the patient. To the physician it supplies accurate and systematic administration of medicine and reports of the case in his absence. It requires tact, alertness, intelligence and involves grave responsibilities.

LESS DRUGS IN TYPHOID FEVER.

It is a very common assertion of old men in the profession, that they use less drugs in the treatment of typhoid fever with their advancing years of experience. This is in part due to a better knowledge acquired by experience of the drugs that are really helpful, and of a better understanding of how to use them. But it is also partly due to their faith in former treatment and methods of treatment being shaken or entirely destroyed by more recent methods of investigation and observation. No *young* practitioner should be misled by this into doing nothing for his patients. He has been employed to do something, to act, to benefit, to relieve, to cure that patient. If he fails to do precisely the right thing at precisely the right time, he is derelict in his duty, and is responsible for any bad results that may follow. He should not be lulled into inactivity with the comforting idea that his patients will probably do just as well with little treatment. He is not in charge of any case of serious sickness as a mere figure-head. He is the representative of the highest skill and learning of the medical profession, and with a profound sense of duty to himself, his patients and his profession, should measure up to it.

DISCUSSION.

Dr. Smoot: This is the first time I have had the privilege of meeting with the Association, and I feel a hesitancy in making any remarks. I feel that I should sit and listen to others. The doctor has given his experience and observation in typhoid fever, and I thought I would give some of my experiences and observations as to the abortive treatment of typhoid fever. I am somewhat skeptical as to the abortive treatment. When I started out to practice medicine, the first few days I followed up Dr. Barthalow's suggestion of the German method—mercury for the first few days followed by iodine and carbolic acid—called the "German specific treatment." I started out with that, and for some time thought that was the ideal treatment. I had a number of cases to be clear of fever in fourteen or sixteen days. One case in which the patient had eight or ten hemorrhages and was clear of fever in about fourteen or sixteen days—a hemorrhage about every other day. I treated him with that treatment, and to prevent the hemorrhage, I gave lead and opium. At the expiration of fifteen or sixteen days, he was clear of fever and convalesced nicely. Continuing that line of treatment, the results were not so good. I would come across a case now and

then, about every other case, which would run from four, five to six weeks. I resorted to bathing and antiseptic treatment, and I arrived at the conclusion that there was really no abortive treatment, and one antiseptic is about as good as another. I think salol has the preference. It seems to go entirely through the alimentary tract and it retains its antiseptic effect through the entire elementary tract. Turpentine is very much the same in its manifestation, as it retains its odor in stools and urine and is a mucous astringent and expels flatus and overcomes tympany. Sulpho carbolate of zinc and similar antiseptics are good, but hard on the stomach, if long continued, and will derange the stomach in a seige of four to six weeks.

Nearly every case of fever that I get, protracted fever, whether suspicious or not, I put on quinine in full doses for a few days as a diagnostic to ascertain whether or not any malaria exists. If after the first six or eight days the fever doesn't succumb, I withdraw the quinine, continuing with the antiseptics as to the feeding. I have got to be afraid of sweet milk. For a number of years it has been the ideal diet for typhoid and all other continued fevers. I am afraid of it more especially where there is high temperature. It seems to coagulate, forming hard curds in the stomach and bowels, thus aggravating diarrhœa and endangering hemorrhage. I think it is a hot-bed for generating and the multiplication of germs. Therefore, I have set aside sweet milk as a diet and have substituted butter milk and egg nogg, made of raw eggs with whiskey, without milk and beef tea and other bland soups.

When I started out to practice, I used cold water almost constantly, with fine results. I found it in some cases in private practice hard to carry out, yet with a few simple arrangements, it is easily carried out. When I resort to the sponging, I advise my patrons to get two and one-half yards of water-proof oilcloth, spread it out under the patient on top of sheet and require the patient, whether male or female, to wear a gown. That gown can be slipped up around the shoulders and the patient is bathed under the sheet, not exposing the patient to drafts or atmospheric temperature; but I find that the ice-cap to the head will answer in almost every case. If the temperature is hard to control, I clip short the hair, whether male or female—when the patient convalesces the hair will be dead any way, and a lady having a large, heavy head of hair gets very tired of it before getting through with such a seige. As a heart tonic, my observation is that digitalis is hard on the stomach and causes diarrhœa. Instead, I give strychnine and whiskey and strophanthus, which is not so hard on the stomach, and my observation has been that it has a prolonged action on the heart. These have been my observations, and we have had a great deal of it in my section. We find sometimes in our section cases running a course of

four to six weeks with almost normal temperature, not over 100 or 101. In a case like that, I give a little quinine all the way through, or equal parts of quinine and salol and treat him systematically.

Dr. Sikes: Speaking of the treatment of typhoid fever, it is one with which all of us is so familiar that each one no doubt has a line of treatment peculiar to his own ideas, and I want to commend Dr. Kent's paper. He has mapped out my ideas exactly. There are some points that we might differ in which he has left a beautiful margin, stating that there are a great many different symptoms in each case, and that it is almost impossible to map out an absolute course of treatment. The gentleman on the left has a clear idea, according to my conception, as to the abortive treatment. I remember to have heard the learned Professor Chew say, in the beginning, a full dose of calomel would often prevent the development of a case of typhoid fever. I believe myself that often times typhoid fever is cut short by a full and thorough cathartic. I have seen a number of cases of what seemed to be clear cases of typhoid fever cut short in three weeks. That is about the usual time required to recover from what is known as an abortive case. As to there being a specific treatment by which we can cut short typhoid fever, I don't think we have one at all.

The treatment of typhoid fever has been mapped out by both doctors who have preceded me, and they have drawn a line of treatment which I consider of benefit and value to us, but we have to treat these cases according to the characteristics of the patient, which may be different in each case.

There are two things that are paramount in the treatment of typhoid fever, as I see it, one thing—which is of special importance—is to have an intelligent nurse, and I don't necessarily have reference to those educated or trained nurses who are employed at a high price, who believe in laying down iron-clad rules and compel everybody to bow down to them, but some good, intelligent and honest nurse, some intelligent lady in the community who has had an opportunity to see and treat and wait upon typhoid fever, and is conscientious about carrying out the instructions of the doctor. That is one of the decided essentials to a good nurse—is a nurse who can say that the doctor said so and so—and go no further—and another thing of great importance in typhoid fever to my mind is the diet. Of course everybody is especially careful of the diet in typhoid fever—everybody realizes the importance of prudence in the diet. Of course coffee is all right, but I think the best thing we can rely on is ripe fruit and ripe vegetables properly prepared. I guess some physicians would think it would be death to give a patient fruit or vegetables in typhoid fever, but I have had a good deal of experience along that line. Take a ripe apple and mash it

thoroughly, until reduced to a pulp, and strain it through a colander, when nothing remains but juice and the pulverized fruit, and it is particularly grateful to a weak stomach; and a ripe tomato treated in the same way, thoroughly strained through a colander—simply get the juice of the tomato (the tomato being about seven-eights water), and this makes a very palatable food for typhoid fever patients—and another thing for typhoid fever is raw aggs—absolutely raw eggs, once or twice a day, or a nice fresh egg stirred up with some whiskey—whiskey is all right in some conditions of typhoid fever, but all cases do not require it. I am not one who believes in the indiscriminate use of whiskey in fevers. I have seen decided disadvantages come from the excessive use of whiskey. In this way it is less apt to disagree with a feeble stomach than milk, soup, etc. At any rate, it makes a pleasant substitute for these things. To my mind the most reliable thing for hemorrhages in typhoid fever is the combination of fluid extract of ergot and tincture of opium.

Dr. Rodman: I have listened with a great deal of pleasure to Dr. Kent's paper. As there is no specific treatment of typhoid fever, we are in the habit of treating it systematically. When the fever rises high, we reduce it by so-called various agents. We also use the so-called antiseptic treatment, which I think had better be termed anti-fermentative and anti-dotal. The eliminating treatment by purgatives might better be considered antiseptic treatment, because by the use of purgatives, we eliminate the toxines and baccilli from the bowels.

As to the treatment of the heart, one point that Dr. Kent did not fully cover, which is of a great deal of importance in my opinion, and that is the early administration of strychnine in typhoid fever, beginning early and giving it in large doses. We get the present effect, but we don't want that so much as the after effect. We all know that a great many cases of typhoid fever die from paralysis of the heart by absorption of the toxine, consequently, when the time comes we want the heart in the very best condition possible, and by the early administration of strychnine in large doses, we get the lasting stimulating, enervating effect of strychnine upon the heart, which of itself is beneficial, and which is lasting, and also when we have that condition of the heart it demands a stimulant such as alcohol and nitro glycerine. We find that the effect is more lasting and more beneficial, and we tide our patients over many hard places to which without the early use of strychnine they would have succumbed.

Dr. Highsmith: I would like to say I enjoyed Dr. Kent's paper very much. If we, as practicing physicians, followed the course of treatment as outlined by Dr. Kent, our patients would receive

the best treatment there is for them, and we would all be as successful in the management of cases as it is possible for us to be.

The typhoid fevers we have to contend with are mixed, that is, typhoid modified by maliaria infection, and I think that quinine in those cases would have a tendency to lessen the fever and make it run a more favorable course. Even in the beginning of these cases if we knew they were to run a case of typhoid, that quinine in the beginning even then will modify the disease. It must be due to this fact that malaria infection modifying the poison in typhoid that we have such a low mortality rate—for they nearly all get well. I think we should be very careful when we have a hemorrhage not to lock the bowels for too long a time. They should be moved in twelve to twenty-four hours after the hemorrhage, for this blood remaining in the bowels poisons the patient. If not worse and the hemorrhage is not repeated in the course of twenty-four hours, leave it alone. That is, do not use opiates, which lock up secretions. Give an enema, or small dose of saline to cause it to pass off, and you cannot be amiss.

On the diet depends a great deal the management of the case. Egg albumen made up with orange juice, called egg albumen and peptinized milk is the diet I use chiefly. As a stimulant I use strychnine sulph. I prefer it hypodermically, and always use it this way where I have a nurse capable of giving it. I give 1-30 of a grain hypodermically every four to six hours; and in the latter stages of the disease, where stimulation is greater needed, I give as much as 1-20 of a grain every four to six hours hypodermically. I rely chiefly on sala as an intestinal antiseptic. I give 10 grains every six hours, or 5 grains every three hours. I find that sala in this way is an antipyretic as well as an antiseptic, and one which is never depressing. In the latter stages of the disease, I use a prescription of oil of turpentine mixer with mucilage, accacia and chlorate of potash solution. I give this in flaxseed tea, and I have never yet seen a case of stranury, even though the turpentine has been kept up for over three or four weeks without any intermission, in some cases. Each case, of course, has to be individualized and treated accordingly.

Dr. Bass: Dr. Kent has covered the ground so well there is little left for me to say but approval. It may be said of typhoid fever that, like the poor, we have it among us always—yet somebody is responsible—somebody has been negligent, if not criminally so, for both conditions. Yet we have it among us, and it is always with us—we meet it every day. And we must contend with it by educating the people individually. In the one we build asylums and care for them; in the other, the individual doctor must educate from bedside to bedside and from house to house, by word and by pre-

cept, instructing the people in the great principles of hygiene, of sanitation.

Within the last two years, we have had many examples and illustrations of what typhoid fever is, and how it is transmitted and extended.

In the late Spanish war, much was learned about typhoid fever as to its care, transmissability and its habitat; but very little more about the treatment and the general care of the patient than was known before. Many specifics have been started and used for it, and all fell to the ground, and are no more. The antipyretic, the antiseptics, the cathartics, the alcoline and the acids have all been tried as specifics and failed—yet they all have their place in some cases. Where we adopt the profilactic treatment, or, in other words, a hygenic and supportive treatment, including food and water internally, externally and eternally, the percentage of mortality is reduced from 20 to 25 per cent. down to 5 to 6 per cent.

Stokes will live always for the idea and expression, "feed fevers" and equally so will the name of Brand for the expression, "bathe your patient."

Dr. Brown: I just want to say a word about quinine. I believe it is a very bad treatment for a typical case of typhoid fever; it can do no good whatever. Of course, where there are symptoms of malaria, it is all right. I have had one patient where I used aromatic spirits of ammonia. I think it of decided advantage as a heart stimulant in extreme cases, and it comes to our aid very nicely.

Dr. Halsey: I will say I have had some experience in typhoid fever, and for the past six or seven years have discarded all treatment entirely except cold water, where the patient's temperature is above 103.

Turpentine I consider one of the greatest remedies, and I believe is good, but I rely on the cold bath, using ice to the head and purgatives.

Dr. Cheatham:—I wish to call especial attention to what Dr. Rodman mentioned, the elimination of fermentation in the intestines. I think from fermentation we have a higher temperature than anything else. If we eliminate the fermentative products of undigested food, our patient will get a great deal better, and I use for that purpose a cold water enema. It acts in two ways: cleans out the lower intestines and gives you the benefit of your cold to reduce the temperature, and I have found that to be first rate, and then change your diet to prevent having recurrence of the termentation process and the fever is not apt to go so high. I have used all the various treatments, but find that strict attention to the diet of more importance than the medicine.

As to the milk diet, some object on account of it forming hard

masses or curd. I would suggest that if he would add water to the milk, or still better, lime water, or take out the curds with Pepsin, that you will find the milk an excellent diet.

I find a very nice way of preparing egg is to take a thick cup and put it in boiling water and get it thoroughly hot, then break your egg in that and stir it until it gets cold enough for your patient to take it. By that time the egg is cooked sufficiently. This will be sterilized food in a sterilized cup, and is less liable to cause fermentation. This method of preparing eggs I picked up in reading somewhere, and it came to my mind just now and I thought possibly some one would like to know that I found it of service, and others may find it so, and I mentioned it for that fact, as it may do somebody some good.

Dr. Halsey: I would like to add that I give the patient water regularly—all that he can drink—cold water, and insist upon it—and, in fact, I use water, as I said, externally, internally and forever.

Dr. Knight: I have not had much experience in typhoid fever. In four years practice I had only had about four cases, having been extremely lucky in that regard. My personal experience is limited. I believe if we used more cold water on the inside and less on the outside, we would get along better. These typhoid germs are absorbed into the system and carried off by the kidneys and bladder.

There has been nothing said in regard to the diet in typhoid fever. My observation has been that a diet of sweet milk will cause yellow stools. I would like to ask the doctor when he left off the sweet milk diet if the yellow stools still continued. I have noticed that a milk diet will produce yellow stools.

If we treat our patient more and treat the disease less, we would get along better.

Dr. Nicholson: The concensus of opinion is that typhoid fever is a self-limited disease and will run its course. I believe in the cold water treatment, and I believe in it all the way through, except one thing, and that is in the administration of stimulants. The part of my practice in which I have been most successful has been typhoid fever. I hold that the strength of the patient ought to be sustained, because the fever is going to run its course.

I find that the discussion of the matter of stimulation has not been gone into as much as I would like. I find nothing to take the place of 8 to 16 ounces every twenty-four hours of rye whiskey right straight along.

Dr. Macon: Everybody must have a whack at this subject, and I will have a whack again at it. I have had more typhoid fever than I want again, and I hope that I will never have a case again. I have tried every treatment I have ever read of, or that I have ever

conceived, or possibly that human mind could conceive—I don't think it would conceive—but still I use it just them same, and one treatment seemed to be just as good as another, so far as I am concerned, if you don't give your patient too much medicine. Keep medicine out of him; feed judiciously. As Dr. Nicholson said, it is a self-limited disease, some cases are shorter than others, for the reason that they have not absorbed so much toxine as others, that is why they are milder. I hardly ever use milk. I believe in peptonoids. They seem to fill the bill better than anything else, and buttermilk, if the bowels are in good condition, that is, constipated. One of the most dangerous remedies that I know of is quinine. As soon as I find out that a patient has typhoid fever, and if you have much typhoid fever in your country, let them have a little malaria for some time before you undertake to give quinine, for if you give quinine, you will have hemorrhage as certain as you are living. More go off with hemorrhage than with heart failure. I don't pay so much attention to high temperature. Sometimes a good many people have a thermometer fever. The first thing I do in the country is to destroy the thermometer. I never let them have it, unless I use it myself. I do away with the thermometer, and in country practice where you have a high fever and cannot use the baths effectually, (people don't understand it much in the country), I have never seen anything better than acetanilid compound. Talking about heart failure. I have had a good many cases, and have never had but one die yet. In that case I used cold baths for the reduction of high temperature, and she died of heart failure, and she did not have any acetanlid in her sickness. Be careful and do not physic your patient too much. Some times after you have been sitting up night after night, and possibly you have been doing too much physicing, go home and take a night's rest, and you are apt to find your patient in a better condition next morning. Don't nurse him to death.

Dr. Whittington: I didn't expect to say anything on this subject. I am from Western North Carolina, and we have a great deal of fever up there. We never have any typhoid. We call it "Mountain Fever." What I want to speak about is my experience with the difference which seems to exist between the character of fever in the western part of the State and the character of typhoid fever in the middle and eastern part of the State. I have been practicing medicine twenty years, and have seen a great many cases of typhoid fever, and I have not seen in that twenty years more than a dozen cases of hemorrhage, and I have used quinine in the treatment of these cases. I find quinine and phenacetine a very good remedy to keep the temperature in check. I believe in it as a restorative. I don't use it for all purposes, but quinine in certain doses is a very

good remedy. If given in too large doses and too much at a time, it may derange the stomach and nervous system. It must be given according to judgment and according to the system.

I never saw but one death in typhoid fever from hemorrhage in my experience of twenty years. I think we a great many times make a mistake in treating the fever and not the patient. We should individualize every case in the treatment of fever; we should not neglect our patients, neither should we nurse them to death. I believe in cold applications, and think it is one of the ideal methods.

One point that has been left in the treatment of fever is the management of the nervous system. In spite of quinine and cold baths, in spite of everything else, sometimes we have convulsions and other nervous manifestations that we want to control. Just how to do this is a hard question. I have had some success with bromide potassium and other mild sedatives. Sometimes when the patient fails to sleep I give a dose of sulphonal and it will quiet the nervous system and give the rest and sleep that they must have.

In the diet, as I say, we must individualize every case; some will do well with sweet milk while others will be troubled with flatulence.

I have found no remedy better than corn meal boiled in boiling water until thick, and when almost boiled enough to call mush, add sweet milk. It will not ferment as quickly as sweet milk, and the patient generally thrives very well on it, and with egg and beef tea properly made, will generally be sustained.

Dr. Flippin: I was raised in the mountains of North Carolina, where we have mountain, or typhoid fever, and I never use any quinine, don't believe in it. I think it is a bad treatment. I think the treatment of mush is bad again. In the treatment of typhoid fever, there will never be any perfect treatment for it; it is a self-limited disease, it is a disease that runs a limited course, and if we don't give our patient too much medicine, regulate the diet and use cold baths, our success will increase.

Most of them get well if we don't give any of the antipyretics. They destroy the resistance and lower nervous force, reduce the temperature at the expense of the heart. If you want to reduce the temperature, use cold water. You can use the ice caps and cold bath, which is the best of all, but I want to say that will not always reduce temperature of typhoid fever. I have had a case of typhoid fever that when the cold bath was used, the temperature went from 104 to 107, and my patient was in extreme condition, and I ordered a tepid bath and with the tepid bath the temperature dropped from 107 to 103. This man had hemorrhages, kept on having hemorrhages. I used saline infusions, and he had ten or twelve different hemorrhages. Finally he bled to death. I have lost a good many

patients with typhoid fever, have had a good many to recover. A man cannot outline any treatment for typhoid fever.

I believe if you give anything to make sleep, give opium. It acts as a stimulant. I like it better than sulphonal or trional or the bromide or anything of the kind. Use cold water as an antipyretic when you can. The ideal diet I think is the milk. I have used peptonoids. I am sorry to say that I have used beef tea. It is the nearest thing to nothing that any man ever gives. It may be a stimulent at times, but so far as nourishment goes, it is nil.

Dr. Whitaker: I just want to say that the gentleman misunderstood me. I don't give mush. I give my patient a small amount of sifted corn meal dissolved in sweet milk. It is one of the best diets in typhoid fever.

Dr. Smoot: This way of ordering enemas to be given to typhoid fever patients is dangerous. I think we should be careful ourselves and advise the nurse to take extreme caution, as they may take the fever themselves.

Dr. Cheatham: I take it every physician would have everything about the patient so protected as to avoid any possible danger of infection to the nurse or himself.

Dr. Kent, in closing: I don't wish to say anything except to thank the gentlemen for their kind remarks and for taking up my imperfect paper and discussing it so fully and so intelligently.

I assure you, one and all, that your remarks have been exceedingly gratifying to me.

Report of the Section on Anatomy and Surgery.

A REPORT OF CASES.

By A. S. PENDLETON, M. D., Warrenton, Chairman.

It is my purpose to report briefly two cases of appendicitis which were of special interest to me on account of the peculiar difficulties of diagnosis, and, as you will see, in neither was a correct one made till after operation.

CASE I.—J. Male. Age 27. Family and previous history negative. Attack was sudden and violent, beginning with intense pain in right hypochondrium extending backward and upward to right scapula and accompanied by vomiting, first of contents of stomach, and then of mucus and bile.

The point of greatest tenderness was just below the ninth costal cartilage. Frequent micturition with vesical tenesmus was a prominent feature of the case in the beginning. With the exception of lowered specific gravity the urine was found to be normal.

Temperature 99-4-5 F., pulse 102. A diagnosis of billiary colic was made and the usual treatment instituted, with apparently happy results at first; but on the third day there was a return of previous symptoms, together with a severe chill, followed by high fever and a profuse sweat. When seen at 3 P. M. the temperature was 103-4-5 F., pulse 110, and there was slight jaundice.

There was a daily repetition of chill, fever and sweat, accompanied by pain and tenderness in the region of the liver and by nausea until four weeks later, when the writer was called in consultation.

At this time the condition was as follows:

Patient greatly emaciated, slightly jaundiced, and very weak. Temperature 103-3-5, pulse 120 and dicrotic.

On examination a large tumor, filling the whole of the right side of the abdominal cavity, could be readily outlined and

fluctuations easily detected. Diagnosis of abscess, most probably of the gall bladder, was made, and, with that belief, the operation was begun by making an incision just below the costal margin. On opening the abdomen the abscess was found to have no connection with the gall bladder or liver substance, though it extended up to and passed against the under surface of the latter, but was behind the cæcum. After examination through the anterior wound it was seen that the sac could be opened and drained extra-peritoneally by making an incision in the loin, and this was accordingly done, when two and one-half quarts of fœtid pus were removed from the cavity and it was irrigated and packed.

What appeared to be the stump of a gangrenous appendix was found projecting into the sac and the condition was therefore evidently due to a suppurative appendicitis, the appendix being retro-displaced and pointing toward the liver.

Case II.—X. Female. Age 24. Neurotic and lithæmic. Patient was "quite well at 9 P. M.," but shortly thereafter the attack began with violent pain in the right lumbar region, extending downward to the bladder, and this was accompanied by vesical tenemus and a frequent desire to urinate. A history of frequently recurring attacks of "nephritic colic" was elicited and the present was diagnosed as such and treated accordingly.

The next day the pain was not so severe, but required morphine to control and there was tenderness in the loins. The point of greatest tenderness being midway between the crest of the ilium and the twelfth rib and three inches from the medium line of the back.

The urine contained pus, blood and a great excess of urates and uric acid. Temperature and pulse normal.

The pus and blood disappeared from the urine on the fourth day; the pain continued, though not so severe, and the tenderness was greatly increased. Nausea was never a prominent symptom.

On operation the trouble was found to be caused by a chronic recurrent inflammation of an appendix situated behind the cæcum and pointing upward. This is the report I obtained from the surgeon who performed the operation, who added that it was his opinion till the operation was begun that he had to deal with a pyclitis due to the presence of stone.

The diagnostic significance of bladder symptoms in suspected appendicitis has already been brought to the attention of the profession, I believe, but in these two cases they would seem to have been of a special importance, although in the last case they may have been largely due to the excess of urates and uric acid in the urine. You have observed no doubt that in neither of these cases was McBurneys point that of greatest tenderness.

In my experience with appendicitis the bladder symptoms have always been more or less prominent, and I would be glad to hear from you as to your opinion in regard to their diagnostic importance.

DISCUSSION.

Dr. Crowell: I had a case similar to the second case mentioned by Dr. Pendleton about a year and a half ago, in which the same symptoms appeared as those given by him, and I speak of it because of the fact that I made the same diagnosis that he did, pus in the pelvis of the kidneys, which was about the same. On exemaination of the urine, I found a good deal of pus, blood and tube casts in the urine. Because of there not being a sufficient amount of pus for pyelonephritis, when I went to do the operation, I went in anteriorily, with the intention of reflecting the peritoneum backward to get to the kidney. In making the incision, I found the pus from appendicitis, and extended the incision anteriorily, removed the diseased appendix and drained in this way, and the patient recovered.

THE SURGICAL TREATMENT OF CHRONIC ULCERS

By JAMES M. PARROTT, M. D., Kinston, N. C.

Of all the commonplace diseases which afflict mankind, a foul chronic ulcer of the leg is one of the most disagreeable. The proper treatment of this condition seems to be really but little understood. In my experience most doctors dismiss them with some placebo or at best after a few weeks give them up as incurable. No more erroneous idea can possess the physician. I know of no chronic disease more easily or quickly cured than chronic ulcers, should the proper treatment be employed. This does not consist of salves, powders, lotions, etc. This line of treatment will, to state it mildly, do the sufferer no good.

Chronic ulcers are surgical, and must be treated as such. It is

very important, however, to search for the cause, and correct that first. Many of these cases are syphilitic, and in such we must institute the usual anti-syphilitic treatment for several weeks at least before operating. The ulcer itself in these cases is usually very foul, and must be curetted thoroughly, particularly the hard indurated edges.

Tubercular ulcers should be curetted if very dirty, and the ragged edges removed. Iodoform locally is a very valuable help and the usual anti-tubercular treatment must be instituted rigorously.

Anemic patients must be given appropriate attention, and it is important that those with malarial cachexia anemic receive constitutional, climatic and dietetic attention. In other words, we must help our surgical procedure with a proper constitutional treatment suitable for each case, and everyone has some cause in the back ground.

The preliminary preparation or treatment of the ulcer is of some consequence. When these cases are first seen they are generally filled with slough. When practical all of them should be curetted, except perhaps in some instances varicose ulcers. In these, of course, the proper veins must be ligated before the treatment is directed to the ulcer itself.

When for any reason the curette cannot be used, the surface and edges should be cauterized after irrigation with sterile water and peroxide of hydrogen. Brewers yeast, papoid, etc., have been recommended at this stage. I have never had occasion to use them. All necrosed bone must be removed and local eczemas cured.

After the ulcer has been thoroughly cleansed, whether at once with the curette or more slowly by other means, antiseptic dressing should be applied from time to time until the granulations are strong and healthy. This is best reached by stimulating them with moist 1-3000 bichloride dressings, used alternately with calomel or subnitrate of bismuth. Personally I use the bichloride dressing continuously locally for several days, replacing them every 24 hours. When the surface is filled with granulations I dress it with the bismuth for 48 hours, then irrigate and re-apply the moist bichloride as before for 24 or 48 hours. The ulcer is then ready to for the operation.

Many fail in this work because the ulcer is not prepared as it should be. It is most often the case that the ulcer has been improperly curetted or cauterized when this is needed, which is generally the case, though not always so. The edges must be removed and the deepest recesses of the ulcer reached. All suppuration must practically cease before the operation is performed.

Several high authorities have recently advised the entite removal of the ulcer, and that the surface be grafted at once. This is sometimes the most expedient procedure, though I must confess it has several very objectionable features, which outweigh its advantages in most cases. In my opinion auto or hetero plastic transplatation cannot be compared to the Thiersch method of grafting. Though sometimes it may be necessary or best to use one of them. The Reverdin or pingraft method is a miserable makeshift, and more often fails than succeeds.

Parenthetically, I may remark that the Thiersch method of grafting is highly gratifying when practiced after the removal of epithelioma, particularly of the face. The wound heals more rapidly, the scar is much smaller, and recurrence is perhaps less frequent.

The instruments needed for a Thiersch method of grafting are really very few. It can be done easily with two olive-pointed probes and a razor. Sometimes scissors curved on the flat may be of service. The dressings are equally simple; the only thing essential being clean oil silk, a few pads of cheese cloth, a small piece of absorbent cotton, and two or three rooler bandages.

That part of the body (the thigh for example) for which the grafts are to be taken are disinfected, and the ulcer thoroughly irrigated. The ulcer is then shaved very lightly to remove the thinnest possible amount of surface. Should there be a little hemorrhage, and there always is, it should be controlled by direct pressure.

The grafts should be as thin as possible, just going down into the papillary layer, and should be large ones. I prefer them an inch wide and as long as the ulcer. They should be transferred at once and directly to the ulcer. Each one should be carefully applied, and all air bubbles and minute blood clots pressed from

under them. Grafts should lie edge to edge and slightly overlap the ulcer all around.

A ilberal use of sterile normal salt solution, frequently applied at the point from which the grafts are taken, facilitates their removal, but I have never seen the necessity for floating them in the solution before they are applied to the ulcer. It is much easier to tease them off the razor directly on the ulcer with the probe.

A general anesthetic is usually required, but I have operated without it. It is not so painful as one would imagine. I have used cocaine, but do not like it for reasons which are obvious. After the grafts are placed they are covered by two layers of oil strips, the second at right angle to the first, and so arranged that the meshes are of sufficient size for the escape of all discharges. Maceration is thus prevented and the surface is thoroughly protected. This is covered with sterile gauze and cotton, and the whole snugly bandaged. It is probably best to remove the first dressing on the third day, though it may remain even longer. The wound is to be irrigated at each seance with normal salt solution. The use of the oil silk should be continued until the grafts are thoroughly united, and then bismuth substituted to prevent undue maceration. The drying powder if continued too long will harden the tissue too much and must be used with some caution.

The grafted surface must be protected for some time by any simple surgical dressing. The areas from which the graft are taken are at once dusted with bismuth and always heal kindly and promptly.

In reviewing my work I find that I have never had but one to fail, and that in a very old and decrepit subject. Even he was much benefited. There is no question but that this treatment is by far the best for chronic ulcers. It is practically absolutely sure to cure, and to cure promptly, with never a recurrence. The Thiersch method is far superior to that of Wolff or Reverdin for chronic ulcers.

From my case book I report the following cases, each representing its own type of ulcers :

Case I.—Miss H. Age 17. Family had personal history

negative. Seven years before consulting me she bruised her leg, which soon resulted in the formation of an ulcer. A short time afterwards another of traumatic origin developed on the other leg. She was very aenemic and much debilitated. When seen the ulcers were very foul. Appropriate tonics were prescribed, the ulcers curetted and irrigated. Bichloride dressings were applied and continued, occasionally alternating with bismuth, for three weeks. The ulcers were then grafted with perfect success. Four years later there is no recurrence. These ulcers were of three years standing.

CASE II.—S. 21 years old. White. Family history negative, himself syphilitic. Four years before I saw him he developed an ulcer of the anterior aspect of the leg. When seen the ulcer was foul, ragged edges and covered with lymph. Flax seed and charcoal poltices were ordered, and anti-syphiltic treatment begun. Later the ulcer was cauterized and dressed as usual with bichloride 1-3000. Fifteen days later the ulcer was grafted in the usual manner, and in a short time the patient was discharged cured.

CASE III.—Was a varicose ulcer of the usual type. The ulcer was dressed antiseptically, and the veins ligated. Afterwards the ulcer was curetted and treated as before described, and later skin grafted. The patient was permanently cured.

CASE IV.—I quote from an article along this line published by me in the *Medical News* in 1897: "I was called in consultation to see W. H. T., who exhibited an irritable ulcer, the leg being much swollen and very painful, the patient's temperature being 102.5 degrees F. The ulcer was apparently healthy, but very densely red, the slightest touch causing acute pain. Save a slight malarial cachexia, the young man seemed to be in good health. The ulcer was of six year's duration. A moist bichloride dressing, (1-3000) preceded by the application of a four per cent. solution of cocaine, was applied, and rest in bed, with slight diet ordered. He was given an iron tonic, with Fowler's solution of arsenic. Improvement was very rapid, and eleven days after seeing him I grafted the ulcer by Thiersch's method, with perfect success."

CASE V.—Is very interesting. Though not coming particularly under the title of my paper, I report it at this time, since it shows one of the beneficial uses to which the Thiersch method

of skin grafting may be applied. I again quote from the above mentioned article: "J. L. N. Aged 75. When seen, this patient had an ulceration about the size of a silver dollar on the left temple, midway between the outer canthus and the ear. A diagnosis of epithelioma, which was afterward confirmed by the microscope, was made. He readily consented to its removal, which was done the following day. Immediately after the operation the surface was grafted by the Thiersch method and the patient was discharged, cured, almost without a scar. The whole treatment occupied ten days.

In conclusion, I may say that most all cases were treated by various methods by almost as many doctors, with absolutely no success. Seventy-five out of a hundred ulcers receive no benefit from the usual mechanical treatment, while 99 per. cent. can be cured by the simple operation known as the Thiersch method of skin grafting, if the ulcer is prepared and the operation, and the after treatment directed as it should be.

DISCUSSION.

Dr. W. J. H. Bellamy: I have nothing but words of commendation to offer. It is almost perfect from beginning to end. Our meetings are held for the purpose of expressing our views, and we must not be too modest to get up and express those views. I would like to say in addition to what he has suggested that the use of what might be considered a patent prescription, anti-phlogistine, properly applied, seems to act most beautifully and gives us very good results. That is the only suggestion I would like to make in addition to the numerous suggestions he has given us. I move that the paper be referred to the Committee on Publication.

THE RADICAL CURE OF HYDROCELE.

By HUBERT A. ROYSTER, A.B., M.D., Raleigh, N. C.

It would seem unnecessary to discuss so ancient and simple a malady as hydrocele of the tunica vaginalis but for the confusion which still exists concerning its proper mode of treatment. Surgeons are often uncertain as to what advice to give patients who present themselves for relief. When authorities are consulted there is found a jumble of conflicting ideas, and one is constantly hesitating to choose the plan of treatment suitable for each indi-

vidual case. With this thought in view and this experience as a guide, it is proposed here to examine into the different procedures recommended for the cure of hydrocele and to carefully consider their results.

In order to elucidate the points involved in attaining a radical cure, it is proper to review the pathology of hydrocele. It is a much more common affection than is usually supposed, being more frequent in old and middle-aged than in young men, though it does occur in the latter. It consists in an abnormally large amount of serous fluid in the space between the layers of the tunica vaginalis testis. This fluid is generally clear and of a straw color, but it may be dark and thick or bloody. In all hydroceles the interior lining is glistening in appearance while the sac-wall is more or less thickened. From this serous surface constantly exudes the secretion which fills up the tunic space and constitutes the cystic tumor known as hydrocele. Removal of the fluid simply allows a reaccumulation from the weeping wall, whose secretory power is not disturbed by this process. The only means of affecting a permanent cure is to prevent this excessive secretion by destroying the function of the cells and obliterating the cavity.

Dismissing simple tapping as intended solely for the few patients who are too old and feeble for the more severe methods or for the others who may be so foolish as to refuse them, there are in vogue two well recognized plans for the radical cure of hydrocele: First, the injection of certain chemical substances following removal of the fluid; and, second, some form of incision or excision of the sac. The materials usually injected are the tincture of iodine and carbolic acid, each of which by its irritant action sets up an adhesive inflammation. Excision of the sac may be partial or total; antiseptic incision requires subsequent packing. For permanent results one of these methods must be practiced, but to determine which one, in any given case, is often a difficult matter. Opinions differ as to the value of the injection plan and as to the expediency of the incision methods.

A historical review of the literature will show how vacillating have been the ideas on the radical treatment of hydrocele and how widely the same authorities have varied. The elder Gross, to whom we go as the fountain-head of all surgical knowledge,

speaks of incision and excision as being obsolete, the former being the oldest of all and excision being revived in 1755. Gross' preferable operation was by the Seton method, but during the last ten years of his life he cured many cases "by laying open the vaginal tunic with a small incision, and after all the fluid had been discharged, mopping the sac freely with equal parts of iodine and alcohol, or iodine variously diluted. In no instance have any unpleasant symptoms followed this procedure." He mentions strong objections to the injection method, viz.: occasional failure, escape of the injected fluid into the cellular tissue, severe inflammation and sloughing. He speaks of a case in which death from tetanus followed an injection of port wine and water. It is easy enough to understand, in the light of our present knowledge, why Gross had trouble in a closed sac with the injection method, but did not with the Seton or open wound where drainage was secured. In *Holmes' System of Surgery* (1881) it is claimed that iodine has the advantage over other fluids for injection and that incision into the sac "is an effectual method, though unnecessarily severe for ordinary cases." In the *International Encyclopedia of Surgery* (1886) H. R. Bell quotes Sir Astly Cooper as saying of incision and excision, "that they are too dangerous and too cruel for so trifling an inconvenience," and speaks of the injection method as being known to the ancients. Further, Bell states that "the treatment of hydrocele by antiseptic incision is especially useful when the injection of iodine has failed," or when other complications exist. It is, he says, doubtless a safe and certain method, but it requires an anesthetic and is more likely to go wrong from the patient's indiscretion. "Patients who are too ill or too aged to be subjected to the treatment by injection had better be contented with palliative measures."

Of the more modern writers we find that Wyeth (1887) recommends but two methods, injection and incision, the former to be preferred in recent cases, with a small sac and without thick walls. If this fails, it should be repeated once or twice before the more formidable procedure is done. Later (1898) he says that the carbolic injection method should cure about 75 per cent. of all cases at a first injection and speaks of using in recent years local anesthesia for operating even by the incision method of

Volkmann. Moullin (1891) says that failure occurs in at least one-third of cases treated by the iodine injection and regards partial incision as much more satisfactory. He thinks it a question whether castration is not to be preferred as producing less risk in aged, broken-down patients with thickened sac-walls. Morton's conclusions are quoted in *Dennis' System of Surgery* (1895) and the substance of these is that injection of iodine and carbolic acid will cure about 85 per cent.; that the acid is growing in popularity; that antiseptic incision will guarantee a cure with almost absolute certainty and that the danger is no greater than in the injection method; that the treatment by excision is probably unnecessary and unjustifiable. Tuholske, in the *International Text-Book of Surgery*, regards Levis' carbolic injection method as the preferable treatment, having seen but one relapse in twenty cases, and reserves incision methods for those cases in which the injection fails or complications exist. DaCosta (*Modern Surgery*, 1900) believes that injection of irritants should be abandoned on account of inflammation occurring without drainage. He seems to prefer Hearne's plan of incising the sac, drying the interior with gauze, swabbing with pure carbolic acid and packing with iodoform gauze. DaCosta says, moreover, that "it has recently been proposed to tap the sac with a trocar and cannula, to leave the cannula in place as a drain for some days and to dress antiseptically." Jacobson is well satisfied with the antiseptic incision and prefers it when the patient can lay up. Bryant uses a modified excision method as the best overative procedure. Fuller considers the carbolic injection the method of choice in the largest number of cases. Zuckerkandl (*Atlas of Operative Surgery*, 1902) says that the iodine injection with regard to the certainty of the result stands behind radical incision. The excision method of von Bergmann is favored and also the less radical modification of Winklemann, who incises the tunic and closes it to such degree that the testicle cannot return into its cavity while the cutaneous wound is closed over the folded serous sac and the testicle.

From this array of opposing evidence, we may conclude that the safest plan of undertaking the radical cure of hydrocele is first to withdraw the fluid and inject into the sac a small quantity of

the tincture of iodine or pure carbolic acid, preference being in favor of the latter. If this method fails, as it will in some cases, excision of the sac will offer the best chance of success.

My personal experience leads me to believe that the injection method rarely succeeds the second time, and that after a primary failure nothing is gained by a repetition of the procedure. Some sacs, however, after being injected, fill up with a bloody fluid, which absorbs very slowly and appears to prevent a permanent cure. This fluid may be drawn off with a cannula, without repeating the injection, and thus the desired result may be obtained. Such a state of affairs came about in a case of my own, which, after being managed as described, seems now to be cured. My recent records show 16 cases of hydrocele, one of which was bilateral. Of these 15 were treated by the injection plan, divided as follows: 10 by iodine and carbolic acid combined, 3 by iodine alone, and 2 by the acid alone, the remaining case was subjected to an excision of the sac, with a perfect result, six months after a failure by the iodine injection. None of the cases have so far recurred. It is not permitted me from this limited experience to lay down any positive rules, but I am firmly convinced of the fact that the injection of hydrocele cures a large percentage of cases and that it should always be done first, reserving the more serious, but hardly more radical, operations for cases which cannot be cured by injection. Carbolic acid is still gaining in favor and Coley has lately suggested its use in much smaller quantities than usually advised, viz.: 5 or 6 drops, an amount which he asserts is sufficient for even large hydroceles, if it is thoroughly distributed over the sac-walls. My combined use of the acid and iodine was thought of as a means for obtaining the good effects of both agents, I think, however, that a few drops of carbolic acid will be the ideal injection fluid.

DISCUSSION.

Dr. Rodman: Mr. President and Gentlemen—I have had some little experience with the treatment of hydrocele by the injection method. I had six cases in which I used carbolic acid in all of them. I found that I cured four out of the six. The other two were not cured, and I gave the injection the second time, but it failed to cure them. My experience has been where you are going to use injection, it is best not to tap them at all, and you have better results if they are the first cases that have never been tapped at all. I have listened to Dr. Royster's paper with a great deal of pleasure, and he seems to have covered the ground very fully.

Dr. Flippin: In regard to Dr. Royster's paper, there is one little point I would like to bring out, and that is in regard to introducing the needle before withdrawing the fluid. The tunic will retract considerably after you withdraw the fluid. I would recommend to inject through the needle after the fluid has all been withdrawn. I had a case of a man 65 years of age that I injected carbolic acid, and he had a return of the fluid in about six months, and I re-injected it twelve months afterwards. I had left that part of the State and was sent for to go back and see this man, and I found a very large and full hydrocele with a very big sack. I made a vertical incision, and when I got down to the tunic, I decided to remove the testicle, which I did. That has been nearly seven years ago, and I saw this old gentleman three weeks ago; he was entirely well, and very much pleased over the operation, as there had been no return whatever, and I think that in certain cases where the sac is very thick, that the probabilities are in aged men to remove the testicle in certain cases is about the best operation that can be done.

Dr. Bass: The idea seems to be to get a certain amount of irritation. Sometimes you can get that by manipulating the trocar. I had some time ago four cases in succession, infants under 2 years of age, in which after drawing off the fluid, I thoroughly irritated the sack with the end of the needle, and all four with perfect success—so in children or infants, you might say, it doesn't seem to be necessary in my experience to use carbolic acid or iodine. In older people or grown people, it does very well. You will find, like the doctor relates, if at the first injection you don't get relief, it is hardly necessary to repeat. The only thing necessary is to fully drain in some way by excision or incision. I think by irritating the sack, the needle is sufficient cure in the majority of cases in very young patients.

Dr. Crowell: There is one thing that has not been mentioned that I would like to call attention to, and that is the importance of getting out all the fluid before injecting the acid so as to get the full

strength of the carbolic acid on the sac wall. I saw an operation performed several times last spring in New York by Dr. Swinburne, from which he claimed good results. He cut down and made an incision through the tunic large enough to turn the sac wrong side out through it. He then mopped the serous surface with iodine and stitched the erroted sac behind the testicle. The operation is very simple and can be done very well under cocaine.

Dr. Parrott: Without criticising, I would like to say in my opinion the results which Dr. Royster obtained from the cases in which he used iodine and carbolic acid compound, was due to the effects of the iodine, because used in equal parts, it is highly probable that the carbolic acid was neutralized in its effect by the alcohol contained in the tincture of iodine. As to the injection method, I won't speak from my personal experience, as I have had practically none, only one case, and that was an absolute failure. So far as I am concerned, I am very partial to the use of the old Volkman operation, that sets up a good, strong, healthy irritation. The only objection is the strong reaction.

Dr. Smoot: I would just like to make a remark on one point in regard to injection and withdrawal—inserting the hypodermic needle before withdrawing the fluid. I had a peculiar case some time ago, or rather a peculiar experience. As my hypodermic needle wasn't in first class trim, I thought I would use a simpler method, and that was, after evacuation, I filled my cannula full with acid, but the cannula remained full and the acid could not be distributed into the sac, so I raised the scrotum and withdrew partially the cannula and by manipulation tried in vain to distribute the iodine into the sac. I think the suggestion there is a good one—to first insert the needle before emptying the sac, and on withdrawing the fluid, then inject the iodine or medicine forcibly through the hypodermic.

Dr. Royster: There is very little to say in reply because I presented enough differences of opinion in my paper. I see no difficulty in using a trocar and cannula, if you grasp the tumor itself with your hand and plunge the instrument in suddenly. You are bound to get it into the sac, and then the trocar can be withdrawn and the fluid injected with a syringe, which will fit the end of the cannula. The treatment of hydrocele in children mentioned by one speaker, is just the proper thing, but some of these cases will get well without any treatment at all. I agree with Dr. Parrott in regard to the combination of iodine and carbolic acid. The result was due rather to the iodine. I thought the carbolic acid might in some way alleviate the pain which is produced by the injection, but I believe now that the carbolic acid, all things being considered, is the best agent for the injection method.

A CASE OF INTRA-SPINAL COCAINIZATION WITH UNUSUAL FEATURES—UNILATERAL ANAESTHESIA ONLY.

By HENRY McKEE TUCKER, M. D., Raleigh, N. C.

The case which I am about to report is to illustrate a rather peculiar result of intra-spinal cocainization. I believe it is the cases that exhibit peculiarlties that we learn most from, and that should be reported and spoken of.

The patient was admitted to Rex Hospital and fell to my service, suffering from gangrene involving the two smaller toes and an adjacent small area of the foot. Briefly stated, her history is as follows:

Family and past history negative.

Present trouble: Stuck a square, medium size, rusty nail in the foot, over the head of the metacarpal bone, barely through the skin; nail carrying in a small piece of the leather. Suffered very little pain for two or three days and, continued to walk. In four or five days foot began to pain, throb, swell and become red. Inflammation increased. In about six days toes began to turn black and was lanced three days afterwards. Three days after this she was admitted to the hospital.

On admission to hospital the urine was examined with the following results: Sp. gr. 1041, reaction acid, albumen and sugar in abundance. No casts, no renal epithelium. The patient gave history of habitually passing abnormally large quantities of urine, but the exact amount passed daily was not measured.

If I may digress, I will give a brief review of some of the anatomical points of the cord and membranes.

From without inwards we have the dura mater connected at intervals by isolated bands to the delicate arachnoid membrane. Attached above to the foramen magnum it extends below as far as the third sacral vertebra. Beyond this it is an impervious cord. The space between the arachnoid and pia forms the subarachnoidean space, largest in the lumbar region, filled with the subarachnoidean fluid, in which floats the cord with the pia. The cord is said to be capable of movement from one-half to one inch. It terminates in the adult at the lower border of the first lumbar vertebra, and is contiuued as a slender filament, the filum termi-

nale. With the dura laid open opposite the first lumbar vertebra the roots of the lumbar and sacral nerves are seen, forming the cauda equina.

The technique used after Goldan was as follows:

The field of puncture was prepared the afternoon before and the day of the operation as for any other operation. The solution was made at the time of the operation by boiling water in a previously sterile test tube for five minutes; measuring off a drachm of this boiled water one and a quarter grain of cocaine was added, making a two per cent. solution. This was held over the flame just below boiling for about two minutes. Syringe and needle of course were boiled. The patient sitting perfectly level on the table, bending well forward, the point of puncture was made immediately below, and one-quarter inch to the right of the tip of the spinous process of the fifth lumbar vertebra, the needle entering the subarachnoid space, the point of puncture corresponding to the space between the last lumbar and first sacral vertebra. It was my intention to go between the fourth and fifth lumbar, entering the skin at a point immediately below and one-quarter inch to the right of the fourth spinous process, corresponding to a line drawn on a level with the crests of the two iliac bones. Owing to the excessive adipose tissue, it was hard to make out this line accurately, as well as to locate the spinous process, and, as stated above, I entered the space between the last lumbar and first sacral, instead of between the fourth and fifth lumbar, as desired. The entrance into the subarachnoidean space was shown by the dropping of the spinal fluid. After a few drops had escaped, the needle was attached to the syringe and 20 minims of cocaine solution was introduced; the needle after two minutes, was withdrawn, and the opening closed with collodion. In about ten minutes she complained of a severe headache and a peculiar sensation in her right lower extremity. There was slight anæsthesia at the time. From time to time she spoke of the limb "feeling numb," and said she could not raise it from the table. The first anæsthesia noticed was slight. This gradually increased until there was complete loss of sensation in the unaffected extremity, as high as the middle of the thigh, the anæsthesia gradually decreasing upwards. A sterile needle, stuck down

to the bone, elicited no pain, and it was done without the knowledge of the patient, while on the affected side, the left, there was at no time more than slight loss of sensation. In about forty-five minutes sensation began to return, anæsthesia gradually diminished, pulse and respiration slightly accelerated. The patient was returned to her bed, and during the night she complained of considerable pain in her back.

Six days after this another attempt was made. At this time the point of puncture was made on the left side, instead of the right, between the fourth and fifth lumbar. Twenty minims of the cocaine solution were introduced with practically the same result as obtained at the former time. After waiting about 20 minutes 20 more minims were given; still, there was only partial anæsthesia of the affected extremity, and, as before, complete anæsthesia on the unaffected side. The patient's pulse and respiration were accelerated, the pulse small, very feeble, and running up to 140.

Disappointed in not obtaining sufficient loss of sensation for amputation the second time, she was again returned to bed with the leg unamputated.

Ten days after this another attempt was made, waiting this length of time for the cerebrospinal fluid to be re-established. In the meantime the gangrene was slowly extending to the other toes, now involving the great toe. The needle was introduced on the left side at the same level as at the previous trial, *but no fluid returned*. This being the case, it was thought best not to introduce cocaine, as it should only be done when spinal fluid has been seen to drop from the needle. I decided, in spite of the diabetes, to have chloroform administered. This was done, and the leg amputated at the lower third, leaving a long flap. The ends of the flap subsequently became gangrenous, sloughed off and the wound healed by granulation.

Now the question of interest and the one which prompts the reading of this paper is: Why was the right and unaffected extremity, each time, the one to be completely anæsthetized, while the left was never but slightly anæsthetic?

Again, why was it, there was no appearance of the subarachnoidean fluid the last time the puncture was made? Of course

it is possible the needle did not enter the subarachnoidean space; yet it was introduced in the same way as at previous times and fully as deeply, and was as freely movable as before.

Before I conclude I want to say that I am not an ardent advocate of intra-spinal cocainization. In fact, I think it is only in the most carefully selected cases, if at all, that it should be used; and these cases few and far between. While we read of successful cases, we read of some that are the most perfect failures, as well as some exhibiting alarming symptoms. Can any one say that in selected cases (in which general anæsthesia is thought to be contraindicated) the patient would not bear chloroform or ether equally as well? There are few surgeons who have not given chloroform or ether to patients with cardiac or renal disease without bad effects; and yet some of these are the selected cases for this method of anæsthesia. I believe, that taking even these so-called selected cases, you will have better results on the whole and less trouble with one of the general anæsthetics.

In twenty-six of the cases reported by Goldan two developed pneumonia. May this not have been due to the exposure of the back in the preparation of the patient, to the wet clothes and the depressed condition of the circulation, which is at first lowered by full doses? Tuffier, for instance, reported a case dying of asphyxia, in which, at autopsy a pulmonary thrombus was found, showing the depressed condition referred to.

These two cases, out of Goldan's twenty-six, seem to suggest that pneumonia is more common after this method of anæsthesia than from general anæsthetics.

Most of the selected cases for this method are those with some renal lesion; and yet one of the contraindications to cocaine is disease of the kidneys with obstruction to the urinary organs. Again, who can tell which patient has an idiosyncracy for this drug? Biddle reports a fatal case from eight drops of a four per cent. solution given hypodermically with congestion of the kidneys, brain, etc. Another case is reported where a quarter of a grain, given intra-spinally caused the most severe and alarming symptoms. The best authorities agree that at times shock is produced from this method, which can be compared only with the most profound chloroform narcosis.

Considering the many disadvantages and the few advantages this method has, there are certainly only a few cases in which it should be preferred to general anæsthetics.

If the statement that, "when any fibres of the spinal cord are destroyed, they are never rebuilt, probably resulting in an ascending or descending degeneration" is true, then he who uses the puncture as high as the cervical region (where the cord is not unlikely to be iujured) is more fool-hardy than wise, more heartless than brave.

THE VALUE OF A KNOWLEDGE OF ANATOMY FROM A PRACTICAL STANDPOINT.

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When your President suggested that I should address you on the subject of anatomy, I thought it might possibly not prove of interest to you.

In the medical curriculum it has too long been regarded as a theoretical and not a practical branch, an elementary and not advanced study; in fact as one of the necessary evils that a person is compelled to submit to in his earlier student days, but is freed from as soon as he takes up the more utilitarian and practical branches of medicine and surgery.

This view of anatomy has led students to thoughtlessly underestimate its actual value and neglect and shirk it when possible, and finally discard it until forced to resume its study in a spasmodic sort of way to meet the actual demand of practice in after years.

To present to you for consideration an already condemned subject, confronted me with a task for which I felt illy prepared and one which would not have been attempted had I not felt sure of the justness of my cause.

During the earlier years of my medical education I devoted a large amount of time to the study of anatomy. Then, when what appeared to me to be more important needs presented themselves, I did as others have done, neglected it, but finally seeing the errors of my ways again took it up. The question suggests itself why has anatomy been such a dry, uninteresting study to the

medical student? I believe because, first, he has not been convinced of its value in actual practice and, secondly, because it has not been taught and studied in a suitable manner.

Medicine and surgery were practiced, in a way, for centuries before any anatomy was known, and even now there are those who still think it a thing of ornament and not of necessity, to be cultivated by the medical diletante and not the busy practitioner.

I have heard it urged that the better anatomist one is the worse surgeon he makes because he becomes timid, being afraid of cutting important structures, and that it is better to be ignorant and cut fearlessly, tying any vessels that may happen to bleed.

The teachers of anatomy themselves had not enough faith in its practical value. Sometimes it was taught by physicians, sometimes by surgeons and often by those who practiced not at all. Is it any wonder that the students came to regard it as unimportant as did their teachers?

The fresh student just beginning medicine had piled up in front of him an immense mass of abstract facts in the form of Gray's Anatomy and told to absorb it. He was urged to use his memory, but no rational instruction was given to enable him to understand his subject nor to show how he could usefully apply what he so laboriously toiled to acquire.

We have all passed through this experience to a greater or less degree, but for our successors I hope the path will be different.

The fault was not entirely with our teachers but lay partly with the character of the times itself. Anatomy was not the only unappreciated, badly taught subject. Superficiality has been the besetting sin of our people.

We have been seeking dollars, not learning. Commercialism is the curse of our age. Any item of study that does not immediately show its direct financial value is ignored so that when unknown conditions arise there is no one able to meet them. We have been too busy to study out the reason for things and find out why they are so. That is why we have so few truly great men. Our weakness in this respect has been perfectly apparent to foreigners. Listen to what the famous French philosopher, Renan, said about us: "The countries which, like the United States, have created a considerable popular instruction

without any serious higher instruction, will long have to expiate this fault by their intellectual mediocrity, their vulgarity of manners, their superficial spirit, their lack of general intelligence." It makes one shudder! If any of my hearers doubts its truth he may readily be convinced by seeking the association for a short time of the representative men of his profession in foreign lands. As a rule they are both more learned and cultivated, but the difference is rapidly becoming less. The times are changing and methods of education are progressing and nowhere so rapidly as here in America. Anatomy is feeling the onward impulse as well as other branches. It is our duty to help.

While the study of anatomy feels the impetus of the general educational movement it cannot lie idle and expect to be carried along without effort of its own but must work out its own special problems and not be content with being a follower but strive to be a leader in the field of knowledge.

This brings us face to face with the problem: How can anatomy best be taught and utilized? Let us first inquire: What is anatomy, and is it of service in the practice of medicine?

For our purpose, it is the science which treats of the structure of the human body—please note, that it is the *structure* of the body.

The question suggests itself: Is it necessary to know the structure of the body? All will say yes, if one wishes to practice medicine and surgery.

To what extent should one know the structure of the human body? And here we part at once. There will be as many different opinions as there are individuals. Personally, I believe we ought to know a whole lot about the structure of the human body. I believe we have been wofully negligent about this important branch. We have been lacking in industry and application as students and perfunctory and inefficient as teachers. I am pleading for a change. Our mission in life is, to treat the sick and help the injured, and we should so study our anatomy as to best qualify ourselves to fulfill that mission. Before one consents to devote much time to a branch such as anatomy, he must be convinced that what he is to study will be of service to him.

Let us then examine what bearing anatomy has on medical and surgical practice.

Abstract anatomy is a beautiful scientific study, but comparatively of little value to a practical physician. If we simply studied the structure of the human body and nothing more we would derive some benefit from so doing but it would be little indeed. It would be such benefit as would be derived from studying the construction of a printing press or any other piece of intricate machinery. Such study, embodied in a medical course, is simply a waste of time. Our minds would be burdened with a mass of facts, of the significance of which we would be ignorant and which it would be absolutely impossible to utilize or remember. That is the way too much anatomical knowledge is acquired. Is it any wonder that the bulk of it has been found to be useless? To prove that a knowledge of anatomy is desirable, we must demonstrate that it is essential to the understanding of diseases and injuries and capable of being utilized in their treatment.

In the first place, a knowledge of the structure of the body is necessary to the understanding of the functions of that body. In other words, physiology is incomprehensible without a knowledge of the structure of the parts involved. This is so much the case that the English taught physiology and microscopic anatomy almost together as parts of a single branch.

To properly comprehend the circulation of the blood, we must know the anatomy of the circulatory organs. How is it possible to understand the course of the blood and the mechanism of its propulsion, if one is not acquainted with the mechanism of the heart and blood vessels? How can one understand the phenomena of digestion if one knows nothing of the digestive tracts and the various glands in connection with it?

Take the nervous system, how could the different properties of the white and gray matter of the brain and spinal cord be understood without knowing what white and gray matter were? It is needless, however, to multiply examples. People can skim through life on very little, but no physiological function can be well understood or studied unless the anatomy of the part concerned is well known. It would be just as intelligent to expect

an engineer to cause his engine to perform its functions properly without his knowing anything about its structure as to expect a student to understand physiology without having him first know anatomy. Even a graduate physician who has not kept up his study of anatomy, on consulting one of our text books of physiology is liable not to understand its teachings, because even the very words used in explanation are unintelligible to him. This fact is a very significant one. It shows that the necessity of knowing our fundamental subjects is greater now than it used to be and we must either broaden our foundations or else be pushed to the side as the current of progress wends its way onward. Perhaps I have said enough to show that a knowledge of anatomy is essential to the understanding of physiology. Is it necessary to say anything about the relation of physiology to practice? Physiology treats of the functions of the body. It deals with the phenomena of life; digestion, circulation, respiration, etc. Medicine and surgery concern themselves with the living, therefore it is evident that to understand disturbed living functions it is essential to understand normal living functions, so that we are all prepared to admit that the time devoted to physiological anatomy is well spent with a view to qualifying the student for his life work.

Let us now pass to pathology and see what relation the study of anatomy has to it. As physiology relates to normal functions so pathology treats of disordered functions. It may involve structures that are large enough to be seen with the naked eye and handled, as the various organs, or it may involve the minute parts which can only be seen and studied by the aid of the microscope. It is a difference of size only, the principles involved are the same, so that we may consider them together.

If possible, the necessity for a knowledge of anatomy to properly understand and comprehend pathology, is still greater than in the case of physiology. How can brain diseases be diagnosed without a knowledge of cerebral structure? Fractures of the skull cannot be understood unless one is acquainted with the bones through which they pass. Diseases of the kidney can only be explained by knowing its anatomical construction. Diseases of the heart require for their comprehension a knowledge of its

position, size, weight, valves, lining, covering, etc. The uselessness of attempting to understand diseases of the blood vessels without knowing how they are built up, distributed, etc., is quite evident. Take the question of tumors. One has to be able to recognize the healthy tissues in order to discover those which are diseased. The very substance of the tumors themselves is described by comparing it with healthy elements. Is itnot evident that these healthy tissues should be known if tumors are to be understood?

Disease exerts its malign influence on the tissues and pathology cannot be studied unless one studies these tissues in their normal state.

No line of pathological study or research can be engaged in unless its anatomical bearings are likewise studied any more than was the case with physiology. Is it needful for me to argue for the importance of pathology as a valuable branch of medical study? I judge not.

Let us pass now to the bearing which anatomy has on the practical branches, medicine and surgery. Anatomy has been recognized from the time of Hippocrates, 400 B. C., as being at least of some practical value in the practice of medicine. The works of Celsus, 53 B. C., Galen, 130 A. D., and others, showed that the ancients considered it a part of their art.

Material was hard to obtain and was prized accordingly, indeed so great was the demand as to lead to the Burke murders in Edinburgh in 1829 to obtain bodies which were afterwards sold for dissection. It is a sad commentary on the spirit of the times when the anatomy which our forefathers learned with such labor and such few facilities, we with our abundance of material and elaborately equipped colleges fail to appreciate and value.

If we do not bestir ourselves it will give another distinguished foreigner perhaps an opportunity to say something disagreeable about us without violating the truth. Of course we all theoretically agree that anatomy is important; but, how important? I submit that in the form of applied anatomy it is of equal importance with the chairs of medicine and surgery; that it is the only rational basis for the practice of each of them. It is the foundation on which physiology and pathology rest, without it there

would be neither. It enables us to understand disease and injuries and indicates their treatment. The practice of medicine and surgery is becoming rational. The empirical method is falling more into disuse and the intelligent public will no longer tolerate it. It is the refuge and resort of the quack, of the unlearned and of the positively ignorant.

Why has surgery made such strides of recent years if it is not on account of the rational basis on which it is founded? Surgery has ever been more ready than medicine to deal with facts and not be content with mere theories. In England every surgeon has been previously a practical anatomist; being required to demonstrate anatomy before becoming assistant surgeon and surgeon. This is a skeptical age. The profession says to the professed discoverer, demonstrate the truth of your assertion or we will wait until some one else proves it to be so before we will accept it.

In other words we have at last reached the stage when a desire is shown to know *why* things are so. Sufficient reasons cannot always be given for the phenomena observed in disease, we do not profess the power of the gods, but that is no reason why we should not strive for perfection.

Let us examine into the relation of anatomy to practice. A patient is sick with a cough, he may have phthisis. We have read that phthisis is most apt to attack the apex of the lung and produce consolidation at this point, so we proceed to investigate. We are confronted with the question, where are the lungs? In the chest, of course! Not a bit of it. They are in the neck for an inch or more above the clavicle, so far as we and that patient are concerned. Suppose another case has been taken suddenly ill with high fever, cough, etc. We suspect pneumonia. We have read that pneumonia is most apt to involve a lower lobe of the lung, so we proceed to percuss downwd from the clavicle and find it to be resonant, hence, he has no consolidation! Wrong again. If we consult our anatomy, instead of our work on practice, we may be surprised to find that the upper limit of the lower lobe is an oblique line from the root of the spine of the scapula behind to the sixth costal cartilege in front and so deduce the practical fact that for suspected pneumonia the dullness should be sought for, not anteriorly on the chest, but, posteriorly.

Suppose the active lung trouble had subsided and we suspect an effusion in the pleural cavity. If we do not know how high up the liver extends, how can we tell whether the dullness is due to the liver or to pleuritic effusion? Those are the cases in which anatomy is paid cash for at so much per consultation.

Perhaps our friend has heart trouble, it may be enlarged, dilated or hypertrophied, who is to decide? He who knows his anatomy, who knows what the limits of the healthy heart should be.

Perhaps the patient has a cold in the head. Out of mere curiosity we inspect the anterior nares and discover one or more rounded swellings. They appear to be nasal polypi, if they are such they ought to be removed; shall we attempt it? Yes, if we are sure we can distinguish polypi from turbinated bones. Suppose we know from our previous anatomical studies that the nose does contain turbinated bones; where are they? Where should they be? Alas! some believe they are attached to the septum.

In diseases of the liver the outlines of the organ enable us to tell whether or not it is enlarged. To appreciate the location of gall stones we must be acquainted with the bile passages. We can have biliary obstruction either with or without jaundice, according to the location of the obstructing gall stone; anatomy tells us why this is so. In diseases of the genito-urinary tract it is necessary to know the position of the kidneys, the course of the ureters and the size and position of the bladder. The various kinds of epithelium found in the urine tells us which part of the urinary tract is affected.

But, enough of medicine, let us turn to surgery.

Here the whole subject is absolutely dependent on anatomy for its comprehension and skillful treatment. Fractures and dislocations would be a complete blank without it. It is necessary in all operations and in some absolutely essential. An individual receives an injury and applies to his physician to be informed as to its extent. This requires the latter to know the normal structure of the body, surface anatomy, if you choose, but how few really do know it as they should, the various bony prominences, the swells formed by the muscles, the many depressions? Does the doctor know what these various bony prominences are?

Does he know what forms the various muscular swellings? Does he know what structures are hidden in the various recesses? Yet, these are the things that enable him to handle the case intelligently. A person receives a cut and applies to a physician, who does his best to cleanse and close the wound, placing the injured member on a splint. He is successful, the wound heals, and on the removal of the splint he finds that an important nerve crossed the track of the wound and permanent paralysis remains. Had he known his anatomy he would have been on the lookout for such an injury to the nerve and taken measures to remedy it. In operating, the methods of various surgeons are largely due to their knowledge of anatomy. One surgeon will expose a part with hardly any injury to the structures, another will cut blindly down, tearing and injuring everything to accomplish his object. The reason is obvious. The first knows the structure of the part and takes advantage of the various clefts and directions of the muscles. He is not afraid to cut into a depression for fear of wounding a large vessel in its depths; but, deliberately works downward, sees and recognizes the dangerous artery, says "how do you do" to it and calmly proceeds to attain his end.

He carefully places his incision where it will do the least harm and consequently performs the operation with the least injury to the patient, both in its immediate and later results.

The other operator does not know his anatomy and may place his incision most anywhere and deliberately cut and tear his way down. It is such operations that sometimes give rise to what are known as surgical calamities. Patients have, at times, bled to death on the table. Limbs have been needlessly sacrificed and the crippled and deformed still stalk through our land asking for relief. Surely it pays a surgeon to study anatomy. Ones attention need only to be directed to this subject of applying ones anatomy to actual practice for him to be surprised at the frequency with which it shows its value.

Far from producing timidity, it inspires confidence. If one has a knowledge of the anatomy of a part he feels no hesitancy in treating an injury or disease affecting it. It is ignorance that begets fear, not knowledge. Let us tear away this veil of ignor-

ance, which like the skin, limits our vision and prevents us from recognizing and properly treating the troubles within.

Enough, I hope, has been said to show that anatomy is first of all, at least one of, the most important of the foundation studies of medicine, and that secondly it is still more valuable in the direct practice of ones profession.

It is not only an elementary branch, but it is a most advanced one. It should not only be studied early in ones student career but continuously to the end. In the earlier years one should study the mechanism of the construction of the body, of its elementary tissues, fibrous, bony, muscular, vascular, etc. The structure of the body should be studied in relation to physiology or the functions of that structure. The skeleton should be considered in relation to its uses. A certain amount of comparative anatomy could be here used with profit. One of the main objects of the human clavicle, for instance, is to permit the abduction of the arm, most of the four-footed animals, particularly the ungulates, cow, horse, etc., have no clavicles, because they move their anterior extremities backward and forward only and cannot abduct them. When we come to birds, in which the function of abduction, as in flying, is more perfect than in man, we see that not only is there a clavicle, but also a reinforcement of another bone, the coracoid, which passes from the scapula to the sternum. Thus we note that the reasons for certain methods of construction of the human body are made evident. It can be carried even still farther. The same point can be directly applied to practice.

The clavicle being concerned in abduction, if that bone be broken, man, so far as that function is concerned, is reduced to the level of the ungulates. He is unable to properly abduct the arm, and so we see that loss of the power of abduction is one of the symptoms of fractured clavicle. The same line of reasoning can be carried through anatomy generally. The muscular system can be studied in relation to the various movements of the body. Duchenne was one of the first to do this, but this great field is still but little worked, and a great opportunity is awaiting a future discoverer. The exact action of many of the muscles of the human body is but imperfectly known, notwithstanding the wide

scope for practical application to the vital problems of fractures and dislocations.

Embryology can also be utilized in enabling one to understand human anatomy. As an abstract study it might be intricate and difficult, but it can be readily used in explaining many of the phenomena of human construction and is of great service in elucidating pathological conditions, such as the formation of Dermoid tumors, various fistulae, cysts, diverticula, hare lip, cleft palate, etc.

Anatomy is not uncommonly regarded somewhat as a dead language; something fixed and past, in which no further advances are expected. This is entirely incorrect. Anatomy has advanced the same as other sciences and very greatly during the past century. It is above all in the last fifty years that most progress has been made. Because our schools have not kept up with the times in teaching is no reason for saying that anatomy itself has stood still. We might say that there is an ancient as well as a modern anatomy. Ancient anatomy was poor, its resources were limited. its opportunities few; therefore, we find the old anatomists exerting themselves to acquire a knowledge of the bare abstract facts of human anatomy. They were fortunate in acquiring the merest outline of the subject. In our own country, until recently, dissecting material was comparatively scarce and badly prepared. Reliance was had on didactic lectures and study from books. Some dissecting, of course, was done, but it was limited. Anatomy was practically an abstract science, a hard, dry and uninteresting study. That it was so was due largely to the manner in which it was taught. The method of learning by memorizing details belongs to the past, and one of the advances made in the study of anatomy is in now pursuing it from a rational standpoint. We not only say to the student, this is an important point, but we show him why it is important. Those of you who studied Prof. H. C. Wood's Therapeutics when it first appeared, nearly thirty years ago, will remember how distrustfully it was regarded by some practitioners. Yet, it marked an epoch in the practice of medicine. It was the landmark that separated the old empirical method from the new rational method of prescribing. It sounded the knell of the shot-gun prescription.

It answered the question: Why do you give certain remedies in

certain diseases? What H. C. Wood was so largely instrumental in doing for therapeutics, others have done for anatomy. It has not come suddenly, but gradually.

Practical surgeons have long appreciated the value of anatomy. Sir Astley Cooper and Mr. Lawrence minutely described the regions affected with hernia, and Allen Burns, the head and neck. Bourgery, Tillaux, Anger and Richet in France, made large additions to our knowledge.

In medicine, Sibson in England, published his classical work on Medical Anatomy. It is, however, probably most largely to the German school that modern anatomy owes its existence. The renowned Hyrtl, in Vienna, about the year 1846, was a pioneer with his famous topographical anatomy. Then Luschka, in Tubingen, with his celebrated anatomical plates, and today the Germans are leaders in this department of science. The works of Merkel, Joessel and Waldeyer, Spalteholz, Zuckerkandl, Rudinger, Hildebrand, Broesike and others all bear witness to their activity in this line of knowledge.

When I and some of you were students, now over twenty years ago, we heard such terms as regional and surgical anatomy, but rarely was the word topographical used and never the word "applied."

Regional anatomy, as then taught, was but little more than the descriptive anatomy of regions. The same old, bare facts were paraded forth only in bunches instead of strings. It was the method of the ancients.

The work of the earlier men named above was bound to tell, and in 1874 Braune, of Leipsic, issued his famous atlas of frozen sections. Then it was that the profession began to realize what topographical really meant.

A new era had dawned, it was the era of applied anatomy.

In America we have been slower than the foreigners in appreciating this change in the method of learning anatomy; but there are signs that we are preparing at last to move in the right direction. The day of reason in anatomy has dawned and that of empiricism is passing.

Those of us who are teachers are face to face with the problem of teaching rational anatomy. In the institution with which I

have the honor to be connected, radical changes have been made. The studies of the students first year have been reduced to three: Anatomy—embracing histology and embryology—chemistry and bacteriology.

In the second year, the special anatomy of the organs of the senses, higher nervous system and of various regions, occupies a large portion of the student's course and dissection is carried through both the first and second years. In the third year applied anatomy is taught by the writer by demonstrations before sections of the class. In the fourth year the teachers of medicine and surgery again point out the direct application of the anatomy, which the student has already been taught, to the cases in the hospital wards and clinics.

It is almost needless to say that the value of anatomy lies in the ability to apply it. The object of the course on applied anatomy is to teach the student to think properly, to reason things out for himself. If the subject under consideration is the shoulder, attention is called to the dead body and its shape studied in reference to the bones and other structures which form it, their importance and significance, its construction in relation to its functions and finally to its diseases and injuries and the means to remedy them to such an extent as can be explained from an anatomical standpoint. Take for instance dislocations of the shoulder. A shoulder is dislocated before the class and contrasted with the opposite normal shoulder. Then the soft parts are removed seriatim and the parts which cause the signs of dislocation shown. Then the mechanism is explained; why it is that dislocations occur as they do; why certain structures are injured and others escape, and why it is possible to reduce the dislocated bone if the attempt be properly made. When such a demonstration is completed a student is apt to have a pretty fair idea of the application of anatomy to the recognition and reduction of dislocations of the shoulder. Those of the elbow, thumb, jaw and hip are gone over in the same manner. In fractures, the fractures are shown on the cadaver and by means of prepared specimens, the action of the various muscles and other agencies in causing the displacements and preventing proper reposition carefully pointed out. In other

words, the mechanism is carefully demonstrated from an anatomical standpoint.

But little attempt is made to teach bare anatomical facts; those can be obtained by reading at home; but, the relations of the organs one to another; how to recognize their normal and disturbed positions; how best to approach regions for operative purposes and the numberless practical applications of anatomical facts, these are what we are endeavoring to instill into the student mind. Memory is no longer relied upon. We teach by the eye more than by the ear, and show to the student that what we say is not only true but he sees and appreciates that it is so. Thus the student takes a fresh grip on the study of anatomy. Instead of ignoring it, as he progresses in his course he voluntarily looks it up for himself.

The fourth year students find their third year applied anatomy course of service to them in passing medicine and surgery and those in the third year, knowing that this will be the case, devote increased attention to it. It forms a most interesting course and one which I find is appreciated by the student. The typical course in applied anatomy, as yet, does not exist. It cannot be created, it must be evolved and it is improving all the time. The very existence of the course bears testimony to the growing appreciation of the true value of anatomy to the actual, busy practitioner. It is as much a practical branch as medicine or surgery and indeed cannot be divorced from them. Far from being the dry, tiresome branch of former days, it is now one of the most interesting of any contained in the medical curriculum. The time now devoted to teaching applied anatomy is still too short when we consider the importance of the subject and its widespread influence on the various departments of medicine and surgery. Properly taught it is one of the main agencies in enabling the student to understand his subject and place his practice on a rational basis.

Pure scientific anatomy may be an interesting subject, but for the student of medicine preparing himself to practice medicine and surgery, it is the anatomy that will enable him to make diagnoses and formulate proper methods of treatment that is needed. A student does not enter a medical college to study

abstract anatomy nor any other abstract science. He is supposed to have completed his general education before he enters and now is to be taught the special study of medicine and everything that cannot be utilized in that direction is being gradually eliminated from the medical curriculum. Botany has already been cut out, physics has likewise gone, and even general chemistry is on its last legs. In like manner the time may come when a certain amount of biology and elementary general anatomy may be required before entrance is allowed to the medical course. This will allow more time to be devoted to medical anatomy proper. Knowledge is accumulating so fast that specialism has become necessary. This requires the elimination of all side studies. A medical college can no longer take a student who has not received a good general education and instruct him in such purely scientific branches as physics and chemistry. The utmost it has time to do is to teach the medical application of those sciences.

This practical teaching is extending through all the branches of the medical curriculum, and in none is it more marked than in that of anatomy. It has been my object to point out in these remarks the difference that exists between ancient and modern anatomy. That the former was didactic and abstract, theoretical not utilitarian; that the latter was rational and in the highest degree practical; that the time had come to discard the old anatomy together with the old method of teaching; that applied anatomy is the modern anatomy; that it is topographical rather than descriptive, and above all that reason is to be its foundation and not memory.

In making this plea for your support of the study of applied anatomy I feel sure that it will be granted for there is a brilliant future ahead which it is our privilege to be able to aid in developing.

DISCUSSION.

Dr. Royster: We have just listened to a paper by a man who knows the value of anatomy, both from a scientific and a practical point of view. He has outlined an ideal course of teaching, which he carries through to the letter. The only question which comes up in a subject of this kind is how far the knowledge of practical anatomy is necessary for the physician, and how much time should be devoted to that. I think Dr. Davis has proved to you that anatomy is the key-stone of the arch of medical science, and that without a knowledge of anatomy, everything else must fail; but there are those who, of course, believe that other subjects are more important, and that a thorough working knowledge of anatomy can be better gained from just a general description, or from memorizing certain facts and using these in a bungling fashion afterwards. I know that there are some who decry the knowledge of practical anatomy, as a basis of a good surgical technique—especially the older surgeons, who used to refer to the fact that it was only necessary to tie an artery if you cut it, or repair a nerve if you severed it, or slash into what you want to remove and get it out. I think Dr. Davis was right when he said that timidity comes from ignorance, and not from knowing too much. My definition of "nerve" has always been—knowing what you are doing. Every surgeon has nerve if he is perfect master of the situation. It has always seemed to me a very peculiar thing that the only branch in a medical school in which we have constant object lessons is the one which we so easily forget. There is no subject in which we have at all times such constant drill in object teaching as we have in anatomy, and yet it is the very first one we forget after leaving its study. This shows two things, viz.:

First—The faulty method of teaching; and,

Second—The difficulty of the subject itself.

When we remember that memory consists of two things—concentration of mind and constant repetition—we understand how difficult it is for one to possess a very perfect memory. No one person perhaps in the world possesses these two characteristics in the same degree—the ability to concentrate the mind and the capacity to repeat; but there is one thing which can aid the memory, and that is, association of ideas. This will come from a thorough grounding, from a thorough mastery of each principle which is taught and keeping correct mental pictures.

Dr. Galloway: I want to say that I enjoyed that paper very much myself. I believe the man who is thoroughly grounded in anatomy knows one-half of physiology anyhow, and almost one-half of his practice, and certainly a very large part of his surgery, and I am glad that he has so well and ably presented this paper to the

Medical Society here to-day. I don't see how any one could be a most excellent operator unless he did have some knowledge of anatomy, and I believe with my friend, the doctor over there, that it is his knowledge that gives him at least some bravery when he goes to operate. Without that, he is at sea and always in difficulty. Take for instance the very delicate structure of the eye. It does seem to me if a man doesn't thoroughly understand anatomy, he would always be at sea, and the same way with the ear—I speak of these things particularly because they are more particularly in my own domain. I am very much pleased that Dr. Davis has read this paper, and I do trust that it will be an impetus for us to do more in the line of anatomy.

Dr. Hays: The last speaker has anticipated what I wished to say. Never in my life have I heard a subject on a dry and neglected subject clothed with so much life and beauty. The serious import of the study of anatomy has been brought home to us all, and I think the hearing of this paper will result in many of us taking down our dusty volumes when we get back home and beginning to read up, and some of us will buy new volumes. For all I know, our distinguished visitor may be in league with the book sellers, because I know this paper will result in the buying of new books.

I hope the time will come, though I do not expect to see it, when, after the death of every individual, a post mortem examination shall be made. This should be done, it seems to me, by an officer in the county, who is paid by the county to make that examination. It should be done in the presence of the attending physicians and visiting physicians if they see fit; but the county and the State should require a post mortem examination to be made after every death. This would result in a very much more careful diagnosis, and it would result in our becoming just as familiar with the anatomical conditions as we are with the facial expressions of our patient.

I am sure the paper which we have heard read will be an inspiration to every one present, and I in the name of the society wish to thank the visiting doctor for reading it before us.

Dr. Bass: I wish to thank Dr. Davis for this paper. I was taught anatomy by the best anatomist of his day, Professor Lidy, of the University of Pennsylvania, at the time I studied medicine, and I am struck forcibly with the different manner in which anatomy is taught by Dr. Davis. I am very much pleased with the paper, and I think it will bear fruit.

Dr. Knox: We have all enjoyed the paper very much, and I move that Dr. Davis be requested to have his paper published together with the proceedings of the Society.

APPENDICITIS, ITS DIAGNOSIS AND TREATMENT.

By FRANCIS J. KIRBY, M. D., Surgeon to St. Joseph's Hospital, Baltimore, Md.

There is no one subject in medicine of which more has been written in the past ten years, or concerning which more liberal discussion has been indulged in, than disease of the vermiform appendix; and the successful surgical treatment of inflammations of the peritoneum consequent upon disease of the vermiform appendix, constitutes one of the most brilliant achievements in modern surgery.

To begin with, let us consider briefly the appendix from its earliest appearance in the embryo.

In the embryo the large intestine is not distinguishable from the small intestine by any difference in lumen and lies toward the median line of the body.

The commencement of the large intestine is by the appearance of the caecum growing out forming a lateral protusion of equal calibre and remaining narrow at its blind extremity to form the vermiform appendix, while the remainder of the caecum and colon increase in size.

In the fœtus the caecum is conical in shape and its apex gives attachment to the slender process called the veriform appendix.

The width of this progress is about 6 m.m. (3-8 inches), and its length about 92 m.m. (3 3-4 inches), these dimensions vary a great deal, likewise the position of the appendix varies; as a rule it will generally be found passing from behind the caecum either upwards and to the left behind the ileum and mesentery in the direction of the spleen, or downwards and to the left so as to lie on the pelvic brim or below it; sometimes situated entirely behind the caecum, or in the sub coecal fossa, and may be quite free or bound down to the peritoneum. It has a peritoneal fold the meso-appendix, containing the blood vessels and nerves, which is attached to the appendix for about 1-2 to 3-4 of its length. The distal end of the appendix being generally quite free and surrounded by peritoneum. Its cavity is hollow and communicates with the caecum by a small orifice guarded by a valvular fold of mucous membrane, the valve of Gerlach. According to Ribbert's observation the cavity of the vermiform appendix exhibits a distinct

tendency to undergo obliteration. Out of 400 cases 25 per cent. had the lumen of the process more or less obliterated; in 50 per cent. of the obliterated cases the distal fourth only, and in 4 per cent. the whole process was closed. This tendency to obliteration increased with age.

Ribbert also investigated the length of the appendix at different periods of life and found from an average length of 34 m.m. at birth it grew gradually and slowly to an average length of 98 m.m. by the twentieth year, after this it gradually diminished in length to about 83 m.m. at 60 years.

Ratio of the length of the appendix to the large intestine in the infant at birth is as 1 to 10, and in the adult as 1 to 20. From its anatomy we see the appendix is a hollow pouch with a blind extremity, containing a mucus lining with mucus glands, nerve, blood and lymph supply; now as long as the secretion is produced and drained away normally the organ remains healthy and intact, but in case this is interferred with and there is retention with decomposition of the contents in the appendix, or anything causing impairment of its structure, or that bacteria of sufficient virulence and numbers penetrate the coat of the appendix and there set up various types of inflammation.

Appendicitis is a disease of young life, being most common between the ages of 15 and 30 years.

ETIOLOGY OF APPENDICITIS.

1. Indigestion appears to act as a cause in that the food here provokes a catarrh and brings about anomalous constrictions of the intestines.

It is not infrequent to get a history of an attack coming on after a period of gormandizing, as after the indigestion of large amounts of not very easily digested foods, apples, peanuts and the like. A case I saw recently, the attack, the third one, came on suddenly after a large meal of ham and cabbage taken in the evening, and a patient now under my care had her attack shortly after eating a quantity of peanuts, candy and bananas.

2. Traumatism, as by some violent exercise, foot ball, bicycling, etc.

3. Infectious diseases, as rheumatism and la grippe. Ten

cases of la grippe coming under my observation in an institution suffered at the time with what appeared to be an intestinal neuritis with slight distention and obstruction of the bowels, due to the partial paralysis and loss of tone in the intestines as result of the neuritis, and three of these ten cases developed acute appendicitis two months later, the attack being the first and only one in each case, and upon each I operated for acute suppurative appendicitis. The frequent incompetency of the value of Gerlach, the close communication of the cavity of the appendix with that of the caecum, and the well known normal antiperistaltic movement in this part of the large intestine, which tends to pack the feces in a mass in the caecum would account for fecal concretions and other foreign bodies in the appendix, and would also permit of gases of decomposition and products of putrefaction together with bacteria being forced into the appendix.

Of course the essential cause of appendicitis is infectious bacteria, of which a great number have been found; chiefly colon bacillus and streptococcus.

In one case I obtained a pure culture of the bacillus pyocyaneus as the causative factor in the production of an acute attack of appendicitis.

As to the varieties of appendicitis, they may be classed as follows:

Acute appendicitis, chronic appendicitis, and obliterating appendicitis. These may be further sub-divided:

The acute variety.

Acute catarrhal appendicitis.

Acute interstitial appendicitis.

Acute suppurative appendicitis, with or without perforation.

Acute gangrenous appendicitis.

Chronic appendicitis may be divided into:

Chronic catarrhal appendicitis.

Chronic interstitial appendicitis.

Obliterating appendicitis; this later form may be classed by itself as a third and distinct variety.

One must frankly admit that we are not always able to distinguish clinically the different pathological varieties of appendicitis. It is the diagnosis of appendicitis which is all important and this

does not as a rule present any serions difficulties if we will bear in mind the four cardinal symptoms, viz: Pain, tenderness, rigidity and temperature. In referring to temperature here I mean rectal temperature exclusively. Taking them in order mentioned let us consider 1st, the pain. Pain generally comes on suddenly and may be referred to anywhere in the abdominal cavity, usually to the umbilical or epigastric region, at times over the whole abdomen, the pain is lancinating-cramp-like colicky, and often the patient speaks of it as a regular bellyache, sometimes it is complained of as a general feeling of soreness of the abdomen. In those cases where the pain is dessiminated over the whole abdomen to be localized in two or three days in the right side, as a mass will always be found on examination. The characteristic pain of appendicitis corresponds as noted by McBurney to the location of the attached portion of the appendix, that is on a line drawn from the anterior superior spinous process of the ileum to the umbilicus, about half way between these two points; this is McBurney's point so much referred to in connection with appendicitis; this area, however, is more significant as the point of tenderness, which will be spoken of later. Let me state here that the pain of appendicitis is by no means always referred to McBurney's point, and pain elsewhere about the abdomen does not exclude inflammation of the appendix. The different positions which the appendix may occupy in the abdominal cavity and the different portions of the appendix which may be effected, also the point of involvement of the sympathetic nerve fibres, would readily explain this. For instance pain may be referred to the left side when the appendix points downwards towards the left and generally the appendix is below the pelvic brim; pain may be felt along the spermatic cord and there may be retraction of the testicle as in kidney stone. In two of my cases pain was referred entirely to the head of the penis and along the under surface of the urethra; and at operation a perforated appendix was removed and an abscess cavity in the pelvis evacuated in both cases. Where the inflamed appendix occupies the pelvis there is apt to be bladder symptoms, inability to void urine, pain and tenesmus, or frequency of urination, with passage of small amounts attended with pain in the bladder. I have had as much as 1,500 cc of urine

catheterized from patients with retention and inability to pass urine, and at operation in each case an abscess deep in the pelvis behind the bladder was found. If the appendix is behind the caecum, pain is referred to the back, to the kidney and along the course of the ureter, or to the liver and upwards to the right shoulder. A private patient, young lady 20 years of age, operated upon by me in May of this year. The patient complained of no symptoms except severe continual pain in the coccyx, and to use her own words she "had to always be hunting around for some soft spot to sit down." This patient had a tender spot corresponding to McBurney's point, on her right side. At operation there was found dense adhesions between the large bowel, the caecum, the pelvic organs, and the rectum; the appendix was found pointing downwards and somewhat to the inner side of the colon, the tip of the appendix was below the pelvic brim down in the true pelvis, the appendix was obliterated except for its distal extremity, which was swollen bulbous and gangrenous, had bursted, forming an abscess which had burrowed into the right ovary, this ovary partly forming the anterior wall of the abscess; about 45 cc (1 1-2 ounces) of pus was evacuated, the entire necrotic mass removed; patient did recover and is well today.

Sudden sharp pain after a period of gradual subsidence, or acute pain after an interval of steady dull pain, always means extension of the local peritonitis, and frequently is significant of rupture of the appendix or of an appendical abscess. On the other hand I have seen two cases of ovarian cysts, (one a solid dermoid) with twisted pedicles setting up inflammation, both had rise in temperature and severe pain, which was referred directly to the region described as McBurney's point. At operation the true cause, the strangulated tumor due to twisting on its pedicle was found, and in each case a careful examination showed the appendix to be perfectly normal and healtny.

TENDERNESS.

2. Tenderness, to my mind, is a very important symptom and of as great diagnostic evidence as pain, it is now that the spot referred to as McBurney's point is of value; tenderness over this area, especially if associated with rigidity and temperature, is

always of significance and in severe cases the tenderness is always great.

The great tenderness over the abdomen in females, where there is inflammatory disease of the appendages, or where during menstruation, a possible congested and painful ovary will cause tenderness; but it was never referred directly to McBurney's point as the point of greatest tenderness in any case which I have seen.

I have met with cases where the diagnosis was between appendicitis and an inflamed tube or ovary, and in none of those operated upon was there any appendicitis, except where the tenderness had been referred directly to McBurney's point as the area of greatest sensitiveness. Tenderness may extend all over the abdomen, especially in the early stages of a general peritonitis, or it may extend to the region over the bladder when the abscess is in the pelvis, or it may radiate to the back and loin when the abscess is behind the colon.

Begin your palpation at some distance from the sensitive region and you gradually approach the tender area. A localized spot of extreme tenderness is the surest indication of pus formation.

RIGIDITY.

3. If there is no tenderness there is no rigidity, the muscular rigidity is a prominent symptom, it is a tonic contraction, muscle spasm, and is the result of the peritoneal inflammation and as a rule is in proportion to the extent and severity of the associated peritonitis. The rigidity verly early becomes right sided after the localization of the infection and is very hard to be mistaken—uncover the patients abdomen, stand at the foot of his bed and watch the abdomen during respiration or have the patient take deep inpirations and you will at once notice the absolutely motionless condition of the rigid abdominal wall, especially the right side.

General rigidity at times may be very difficult to make out. General rigidity is very marked in cases of diffuse suppurative peritonitis and this muscle spasm is often sufficient to mask any tumor mass which, after the patient is anæsthetized, is perfectly easy of detection; the muscle is kept in tonic contraction by the stimulus from the underlying inflamed structures, it is regarded as an involuntary protection to the parts beneath.

Sense of touch, palpation, will assist very much in defining the amount and intensity of the rigidity.

Rigidity, with distinctly localized pain in the right side, speaks strongly for appendicitis, and with rise in temperature and extreme tenderness over McBurney's point absolutely seals the diagnosis of appendicitis; and if with these symptoms you have a tumor you know positively it is appendicitis with an abscess. This rigidity is most marked in the early period of the disease or during acute exacerbations (repeated attacks) and as the diseased appendix or abscess as the case may be, becomes firmly walled off, the rigidity diminishes very much, in fact I have been able then to palpate walled off abscesses with a perfectly lax and soft abdomen which I was unable to do 24 hours before on account of the extreme rigidity; and the abdomen always softens as the acute symptoms pass off when a tumor can frequently with greatest ease be mapped out.

Rigidity, then, is an important symptom when taken with pain and temperature—and this rigidity I have never seen so marked in any other disease in the abdominal cavity. Frequently it is very evident to find a rigid abdomen with marked increase of the muscle spasm on the right side, which can be easily made out by palpation.

Rigidity, then, with temperature and tenderness, is significant in that it speaks for infection in the underlying structures in the peritoneal cavity.

TEMPERATURE.

4. In all cases of appendicitis not chronic, and indeed in many of the latter, the temperature if accurately taken in the rectum will always be found to be above the normal. No case of acute appendicitis has as yet come under my observation in which there was no rise in temperature.

The temperature varies anywhere from 99.5 to 104 or 105 and where the infectious agent is most virulent, in those cases is the temperature highest. In cases in which the streptococcus predominated, I have always seen a higher temperature than where any other organism was the causative factor.

Unless the diagnosis of appendicitis is sure, temperature may mean nothing, or perhaps constipation. Temperature and pain

are often deceptive and must be taken along with the other symptoms to be of value. Again I emphasize the necessity of rectal temperature. The thermometer may register a normal temperature in the mouth, while if inserted in the rectum the temperature will be found to be 104 or higher and the patient with a virulent and general infection. I now recall a case of a young woman who was brought to St. Joseph's Hospital with a mouth temperature of 98.6 deg. Fah., while the rectal temperature was 104.5 deg. Fah. This patient was operated upon at once, and two litres of purulent fluid was evacuated from the peritoneal cavity, the result of a ruptured gangrenous appendix. When sent into hospital this woman was not supposed to be suffering from a severe attack, and on account of the low temperature in the mouth was not thought to be very sick.

Vomiting, distention and loose bowels, with general tenderness and cramp-like pains over the abdomen are symptoms likewise of great importance, and the rapidly progressive forms of acute appendicitis very frequently begin this way, and such an attack should lead the physician always to be on the lookout for trouble in the appendix.

I have seen cases which began this way and when operated upon within twelve hours after the beginning of such an attack an acutely swollen inflamed appendix found with turbid exudate in the abdominal cavity.

A great many, in my experience the majority of cases of appendicitis, gives a history of constipation.

Vomiting, constipation, abdominal distension, coming on during an attack of appendicitis, if associated with general pain and tenderness, is always grave. 'Tis significant of a genaralizing of the infection over the peritoneum, with a certain amount of obstruction of the bowels, due to coils of intestines becoming sealed together by the serous exudate, inflammatory adhesions with the accumulation of gases in the bowels causing distention.

Vomiting, of itself, is insignificant, and is very common in any disturbance of the alimentary tract, and may mean merely some indigestion. But vomiting coming on during an attack of appendicitis, especially if the vomiting is attended with no effort, but is merely an easy regurgitation, and if dark in color, is a very serious

symptom and suggests, with the other symptoms, peritonitis, and most frequently a fatal termination. Vomiting depends somewhat on individual idiosincrasy or may be the result of an anæsthetic; occasionally this dark vomit is seen after anæsthesia.

Having considered the diagnosis from symptoms relating to appendicitis, it now becomes important to mention a few diseases with which from the abdominal symptoms appendicitis may be confounded.

FIRST FROM TYPHLITIS.

Typhlitis closely resembles appendicitis; its symptoms are said to be pain in the right side, with a condition of stasis of intestinal movements and presence of a doughy-like tumor in the right side. Personally, I cannot say that I am able to diagnose this condition. Most text-books on surgery refer to it as a part of appendicitis, and every case in which I have seen these symptoms the condition on the operating board or in the pathological room, always showed inflammation and changes about the caecum, adhesions, thickening of bowel wall, etc., and were the result of a diseased appendix, which was invariably found.

From typhoid fever the history of the case, sudden onset of appendicitis, extreme tenderness and rigidity on right side, history of previous attacks.

Typhoid preceded by period of malaise, gradual oncoming anorexia, marked head pains, steady increasing temperature, enlarged spleen, rose spots—agglunation test—and the absence of leucocytosis in typhoid fever.

Tuberculosis of the Caecum.—This a chronic affection and lacks the cardinal symptoms of appendicitis. The tuberculin test would here be of value to clear a doubt. As for cancer the same may be said. It lacks the characteristic symptoms of appendicitis. Intestinal obstruction. At times it may be very difficult to differentiate between appendicitis and some forms of intestinal obstruction, especially if due to bands of adhesions, pressure of a tumor, or constipation, but here the temperature is generally normal and constipation absolute. Coils of intestines can be seen through the abdominal walls making violent peristaltic movements, and a finger in the rectum will find the lower bowel empty,

vomiting is continual, may be fecal, absence of temperature, tenderness in right side and rigidity, Acute indigestion with severe pains and voming. Here you have absence of temperature and tenderness, pressure over abdomen apt to relieve pain—history of having eaten some indigestible food.

Ptomaine Poison.—Little to add here to what has been said concerning acute indigestion, except vomiting more persistent and weakness profound.

Renal Colic.—Pain is here along course of ureter, no fever or other symptoms of appendicitis, retraction testicle in male, frequency of urination, pain along ureter and over pubes in both sexes.

Bile Stones.—Pain is high up on right side, in time in shoulder of same side, jaundice coming on in a few days.

Diseased Appendages in the Female.—Here a thorough examination under anæsthetic will frequently decide the case.

I have known uterine fibroids to cause irritation and set up inflammation in the peritoneum; patients would have rise in temperature, rigidity, general abdominal pain, but tenderness was more in the middle line. Examination revealed the tumor, which was proven by operation in each case.

TREATMENT.

The ideal and only sure treatment for appendicitis can be summed up in a very few words—removal of the appendix in a clean way. Appendicitis is purely and simply a local infection confined to the vermiform appendix; remove the appendix, the patient gets well and has no return of the disease. Appendicitis is not a general or systemic disease, and only becomes a constitutional malady whenever the toxic products of bacterial life gain entrance to the circulation; when the condition is one of toxaemia or septicaemia, according as the toxiness or organisms themselves enter the general circulation and the condition is more or less grave, according to the virulence and class of organisms producing the disease.

A condition of septic infection beginning in a local manner, as for instance, about the surface of the body, would be very quickly met, with an attempt on the physician's part to prevent any

spread of the disease and to cut short the already existing condition, preventing lymphatic involvement, a possible general septicaemia and death. To accomplish this the knife would be resorted to, and free and liberal incisions made.

In appendicitis we have the same condition of affairs, only that the appendix is in the abdominal cavity, and its removal does not affect the future well-being of its possessor, from a physiological standpoint, so far as we know; hence all the more reason for prompt and ready action. Yet, notwithstanding this knowledge, patients are repeatedly kept waiting with expectant treatment in the hope of subsidence of the disease until the abscess bursts, or the disease extends over the peritoneal cavity, ending in a rapidly fatal peritonitis. This condition is frequently met with in patients brought into large hospitals.

Appendicitis, the "abdominal phlegmon" of the English writers, is a condition calling for most careful attention on the part of the attending physician. In all suspected cases of appendix inflammation the physician should keep closely in touch with the surgeon who could share responsibilities in order that the patient may have the benefit of operative treatment just as soon as the symptoms seem to indicate it.

Knowing the safest place for a diseased appendix is outside of the abdominal cavity, still we are at times confronted with conditions which preclude positive assurance of the recovery of the patient following operation and removal of the appendix.

Leaving aside prejudice against operation, let us consider the condition of the patient when called to see him.

In the early stages absolute rest in bed should be insisted upon. If vomiting and nausea is conspicuous, small amounts of hot water given at short intervals, say every 10 or 15 minutes, will frequently relieve it, or better still, small doses of calomel. Food of every kind should be withheld for a few days, but if the stomach is quiet patient may be permitted to drink water, or saline solution as much as a pint may be introduced into rectum to allay thirst and nausea. All local applications to the abdomen (with the exception of cold cloths or ice-bag) as blisters, poultices, counter-irritants, iodine and medicated pastes, should be absolutely avoided; they can do no good and at best have only a psychical

effect. And, again, in case an operation is called for, their presence only complicates the condition by presenting a raw, inflamed or irritated surface in the field of operation, which cannot be properly cleaned, and affords a ready mode of entrance for infectious material and bacteria.

Having made the diagnosis, if the patient is in much pain, a small dose of morphia, combined with a minimum of atropine, may be administered to relieve pain; never give opium until after the diagnosis is assured, and even then its use is undesirable, as it so frequently masks the symptoms and leads one to underestimate the gravity of the attack.

If morphine must be given let it be only in the smallest doses, which will relieve the patient sufficiently to permit him to endure his sufferings. As for purgatives, many of these patients are of constipated habit and great relief is frequently given by a rectal enema effectually unloading the bowels. I can see no reason for locking up the bowels with opium, as recommended by some writers; but, if the stomach will retain it, small doses, as a dram of Epsom salt, saturated solution of hot water every hour till the bowels move, will be attended with free liquid movements and most marked comfort to the patient with amelioration of the symptoms. An attack may after this pass off, never to return. Feeding can be begun gradually and the bowel functions normally re-established. The case, however, may go on continuing to grow worse, when the question of operation then presents itself. No operation should be performed if the patient is dangerously septic, as shown by the pulse, temperature, etc., or if the patient is in collapse, as it will only hasten the end. If, after a few hours, the symptoms seem to be abating, it is better to defer operation until the parts surrounded are more completely walled off, when operation can be done and abscess evacuated under conditions much more favorable to the patient. On the other hand, if there is any increase in the symptoms, as rise in temperature or sudden severe pain, operation should be undertaken at once. I am heartily in favor of operating on every case of appendicitis whenever the acute symptoms are increasing or if they continue severe. I had one case with a rectal temperature of 106 deg., and a pulse that could not be counted, nor felt at the wrists when I saw him.

This patient I fully expected to die on the operating board, but under saline infusions, hypodermic stimulation and rapid operation, this patient made a good recovery and is strong and well today. While many cases of appendicitis do recover after medical treatment, there is no one that can give assurance that the disease will not return; indeed, return is the rule, and may prove the fatal attack.

Having met wlth so many cases of recurrent appendicitis, having seen a number of cases of general peritonitis, profound sepsis, necrotic bowels, large abscesses, dangerous and extensive adhesions of the bowels with obstruction, and prolonged suffering as the result of recurrent appendicitis or from rupture of an ulcerated or gangrenous appendix, a certain percentage of the cases with the mark of death already stamped upon them and found to be beyond restoration to health, I am more firmly convinced than ever that the removal of the appendix when diseased, is the only safe just and sure procedure, and removal of the appendix in the interval between attacks offers very favorable and satisfactory prognosis for the patient.

I do not know of any more unfortunate happening, after an operation for appendicitis with peritoneal involvement, where the surgeon is obliged to insert gauze drains in the abscess cavities or between diseased intestinal coils, and the patient seems to be doing perfectly well for awhile, than intestinal obstruction coming on as the result of adhesions from such drains, and a second operation is demanded for the relief of this otherwise fatal condition on a patient already weakened and exhausted by his attack of appendicitis and consequent septicaemia or toxaemia. I have had two deaths, the result of intestinal obstruction coming on in cases of appendicitis where large abscesses had to be dealt with at the time of operation, and I have been obliged six times to resort to secondary operations for relief here of complete obstruction. It has been my misfortune to know of the same fate occurring in the practice of other surgeons; hence Edebohols speaks so strongly against being compelled to use gauze drainage, and Deaver continually pleads for early operation and removal of the appendix in all cases of this disease. It was the knowledge of this, strengthened by experience, that led me to attempt a new method of

attacking certain forms of appendicitis complicated with abscess, but unfortunately it is an operation which is limited to only certain locations of the abscess, and with your kind permission, I will ask your attention for only a few moments longer while I read an account and report of the case. This report was read before the Medical Chirurgical Faculty of Maryland at the annual meeting at Baltimore, April 24th, 1902.

The so-called appendiceal abscess may result either from a ruptured appendix, due to separation of a gangrenous slough, or it may occur from escape of the elements of suppuration from a diseased and inflamed appendix. There may be an abscess formed with the first attack of appendicitis from rupture, or extension of infective material, or it may occur after one or more attacks.

These abscesses have been found almost everywhere in the abdominal cavity.

Free in the abdominal cavity causing a general peritonitis, walled between folds of messentery, behind or in front, to the inner or outer side of the colon, over the bladder, or extending across the abdomen to left side and pointing in left groin as in one of my cases; or forming a localized collection of pus walled in by the visceral and parietal peritoneum, forming later an abscess just beneath the skin, or in the layers of the omentum, forming a more or less movable mass, or down in the pelvis simulating pelvis abscess. Further, they may be associated by adhesions with some of the important viscera of the peritoneal cavity into which the abscess may rupture.

The cases I here refer to are those where the abscesses are in the pelvis, situated at or below the pelvic brim, their lowest point.

These cases are frequently large abscesses, some of them if left alone may rupture into the bowel.

If opened from above, through the abdominal wall, it is not easy to obtain successful drainage; trephining the ileum or using the sciatic foramen as channels for drainage does not seem without objections; again, every one who operates upon such cases and is obliged to insert large gauze drains, knows the danger of intestinal obstruction and the demand for a second operation for relief of the obstruction of the bowels in a patient frequently only a few days after the first operation and when the patient is in the

least promising condition for such an ordeal. This has caused death in two of my cases, and in cases of other surgeons. Most operators deplore the necessity of using gauze drains in the abdominal cavity, but at times we are compelled to use them. More important, however, is the condition of the patients. They are often so weakened and depressed as the result of septic intoxication and exhausted from a more or less prolonged illness that the prospect for successful operation is not very bright. They do not always bear general anaesthetics well, and the shock due to working about in the abdominal cavity and among intestines is very great. Frequently these patients appear as though they would die on the table.

The case in point was a male. Age 34. Single. Brought to St. Joseph's Hospital 10:30 P. M., February 15th, 1902. History: family and personal negative, except that he has had three or four attacks of cramps during his lifetime. States that on January 25th, 1902, about 10 P. M., was seized with sharp, excruciating pain in centre of abdomen, just below the umbilicus. Bowels had not moved for four days previous to that time, was nauseated in the beginning, vomited, and had eructations of gas. Took various medicines and applied turpentine to abdomen to relieve pain, which lasted severely about one day. Attempts were made to move the bowels during the past week without result, and vomiting became so much worse in the last few days that the patient was brought to St. Joseph's Hospital. He entered on the medical side of the hospital, in the service of Dr. C. O'Donovan, whence this history was taken and note made by Dr. H. J. Keaney.

Facial expression indicative of suffering, countenance pale, eyes sunken, malar bones prominent, cheeks sunken, has a pinched look, tongue dry, dirty, greyish-white coat on dorsum, breath foul, sordes on gums. General appearance that of sepsis.

Physical examination pass over. Abdomen distended, ballooned, loss of epithelium, with red inflamed area over abdomen, due to applications of turpentine.

Palpation: Marked rigidity, especially tender to touch over right side; temperature, mouth, 100.6 deg. Fah.; rectum, 103 deg. Fah.; pulse, 110; respiration, 24; urine, sp. gr., 1,040, acid, albumen, sugar, hyaline and granular casts, diazo reaction negative.

Is nauseated, vomits at times a dark, greenish, yellow fluid. Leucocytes 17,400 p.c.m. Widal reaction for typhoid fever negative.

Rectal enemata given with good result, nausea and vomiting ceased.

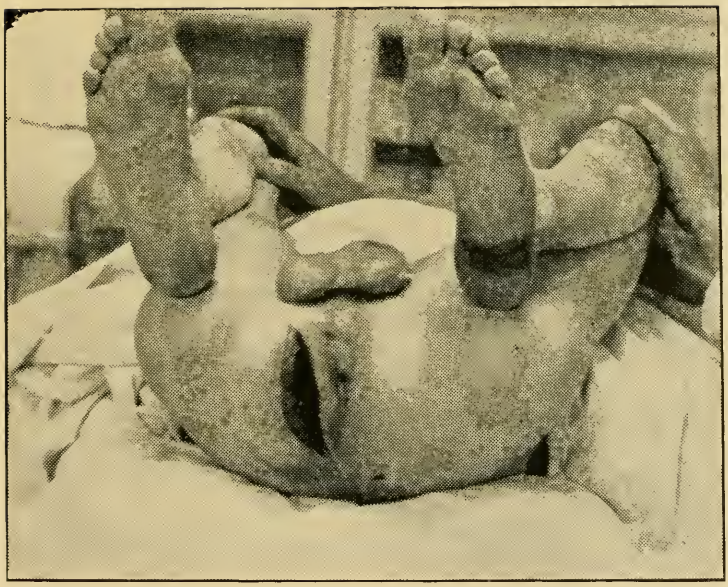
A mass can now be felt on right side of abdomen, abdomen less distended, less tender. Diagnosis, appendicitis with abscess.

Transferred to surgical side February 16th, when this note was made: Patient very ill, skin wet, doughy feel, muddy white in color, cheeks red, flushed, sunken, eyes glassy, breath has a disagreeably sweet odor, body emaciated M. M. pale, anaemic looking.

Lungs, heart, etc., uninteresting. Abdomen, liver edge not made out, spleen not palpable. Abdomen distended, tympanitic, drum-like, rigidity of both recti muscles, more marked on right side, where is seen bulging of the belly-wall, abdomen held rigid on deep inpiration, especially right side, which is motionless. Palpation, distinct mass felt in right side, extending from external border of the right rectus muscle down to and along Pouparts ligament, upward to a line drawn horizontally across the abdomen through the umbilicus at top, then outward and backward around loin to edge of quadratus muscle.

Percussion elicits dullness over this entire area where the mass is felt. Handling, manipulation causes pain. Tension of this mass is cyst-like. Rectal examination, on pushing finger well up into rectum the tip of the finger comes into contact with what appears to be a large soft mass, and by palpation with the other hand over right side of the abdomen and a finger in rectum, a sense of fluctuation is made out. This examination causes much pain. Bladder, prostrate, seminal vesicles, etc., free. Pulse volume small, weak tension, 120 beats to the minute; temperature, rectal 102, mouth 101.2 deg.; respiration 26. Blood leucocytes 27,000, haemg, 36 per cent.; red cells 3,800,000. Urine, few granular casts, hyaline casts, cylindroids, albumen a trace, few epithelial cells, no sugar, sp. gr. 1,034, reaction acid.

Patient's general condition was one of extreme weakness, had lost much flesh and strength, haemg. low, patient anaemic, and his condition of illness demanded relief. After asking that the



ISCHIO RECTAL OPERATION

operating room be prepared for early operation, while waiting I began to consider as to what would be the best operation for this man's condition, offering less shock, rapid procedure and secure good drainage, cure his disease and avoid the almost sure occurrence of ventral hernia if attacked through the abdominal wall. As I had about one year previous successfully operated through the vagina of a female for appendicitis, it suddenly occurred to me if I could use the ischio rectal space here as a route of entrance to this mass I should obtain good drainage, would not run same risk of infecting general peritoneal cavity, do away with some of the gauze drainage, and if successful insure the patient against ventral hernia, anyway it would enable him to build up and recover from his septic condition, when I could do a clean appendectomy later in the usual way. With the valuable aid of my assistant, Dr. F. K. Boland, this was easily accomplished. The patient, practically in a moribund condition, was brought into the operating room, 700 c.c. of normal salt solution infused.

Operation: A curved incision about 17 cm. (7 inches) long was made in the right buttock midway between the tuberosity of the ischium and the anal orifice directly in the ischio rectal region. The fibres of the levator muscle separated, blunt retractors introduced to push the rectum forward and to the left, when the abscess was found easy of access. This was opened and about 500 c.c. of a thick, foul-smelling pus evacuated, when the gangrenous appendix could then be ligated off. The cavity now was washed out with hot sterile normal salt solution, a rubber tube with a piece of gauze inserted into the cavity. Patient returned to bed with rectal temperature 99.6 pulse 110. Bowels moved two days after operation by enema, and later without further trouble. Patient made an uninterrupted recovery, mass quickly disappeared from abdomen, and when last seen, April 10th, 1902, two days after operation, nothing could be made out by rectal, or by combined rectal and abdominal palpation.

DISCUSSION.

Dr. Royster: I always feel as if I have something to say on the subject of appendicitis, whether it is interesting to anybody or not, because every time I find something to learn, something new, that I didn't know before. In the paper we have just heard read, we find a complete and succient review of the diagnosis, pathology and treatment.

It would be very unnecessary for me to add anything to that except just what I can give from my own personal experience, and to mention some points which have been of interest to me.

In the first place, in regard to the diagnosis, this is a comparatively easy matter in every typical case, especially to the man who is looking for it, and we all ought to be looking for it. Pain, tenderness, rigidity and fever are the cardinal symptoms which the speaker has just mentioned. I must say I could leave off the last symptom and still make a diagnosis in nine out of ten cases.

Again I must differ from the speaker somewhat. I can say I have had cases of acute suppurative appendicitis when the rectal temperature was about 99½, which is the normal rectal temperature, and further I have seen such cases without any increase of the pulse rate. Most of these cases are those in which the pus is still in the lumen of the appendix.

Dr. Murphy, of Chicago, to my mind, has made a most clear statement of the pathology which should be borne in mind by every operator; the first 24 hours, inflammation limited to the appendix; the second 24 hours, extending beyond the appendix; the third 24 hours, attacking other structures or ruptured—that gives us a key-note as to the treatment.

If the operation is done in the first 24 hours, it is one of the simplest procedures in surgery; if done in the second 24 hours, more difficulty is offered; if in the third 24 hours, some cases will be lost.

I believe further that even if we operate on many cases of supposed appendicitis and find no inflammation of the appendix, more lives will be saved than by waiting to determine which cases shall be operated upon.

Personally, I have never operated upon a case in which such a mistaken diagnosis was made, nor have I ever seen one.

Two cases recently have interested me in the matter of diagnosis. one in which a young girl had dysmenorrhea for two years, and during that period had two attacks called nephritic colic. I examined her and thought that I discovered an enlarged appendix low down over the pelvic brim. I suggested to the physician, just as a mere fancy, without knowing positively, that the right ovary was probably adherent to the appendix. On opening the abdomen the first thing my finger came upon was a loop, which was an inflamed

appendix adherent by its tip to the right ovary. I removed the appendix and left the ovary, which was perfectly healthy.

In another case in which I advised operation, I found the appendix adherent to a right floating kidney, which I had not recognized before, because of the fact that the patient's abdomen was so tender that it was impossible for me without an anesthetic to feel the misplaced kidney. If I had known before of the existence of the floating kidney, I would have performed the operation through a lumbar incision, as advised by Dr. Edebohls, who removes the appendix through the same incision that he performs the nephrorraphy.

In regard to technique, I may say that since I have seen men operate by cutting the appendix close off at the caecum, I have made use of no other procedure.

A stump left behind, which is infected, or any stump left at all, is an unsurgical condition. The method is simply this: After tying off the meso-appendix, the peritoneum is incised with a knife at the proper distance from the bowel, and the peritoneal cuff is turned back. The sutures are inserted in the Lembert fashion before cutting the appendix and used as tractors to hold the bowel outside the abdomen. The appendix is then severed with curved scissors flush with the caecum and the sutures, usually three in number, are tied, thus closing the opening. Additional sutures can be inserted if necessary.

The last case mentioned by Dr. Kirby must of course have been an unusual one. and the procedure mentioned there I must commend him for; though I should say it is only for selected cases which seem to have an abscess sufficiently low down to be reached by that method, but I think he deserves credit for the way in which he handled that case, and also for the one operated on through the vagina.

Dr. Stokes: Mr. President:—The society is indeed indebted to Dr. Kirby for placing before it a subject of much vital interest, so comprehensively, yet so concisely.

One point concerning acute appendicitis which should demand close attention, is its etiology.

The sooner this point is grasped, so much the sooner will come to us the full understanding and appreciation of the progress of the disease, and a quicker appreciation of what to do in such a case.

I have just recently read of the deduction of a German surgeon, Riedel, along this line.

He names two predisposing causes for an acute attack of appendicitis.

1. The presence, in an appendix free from disease, of an enterolith which may set up a secondary disease.

2. Appendicitis granulosa, in which a very vascular tissue separates the tubular glands of the appendix, pushing them aside, and in this form a sudden attack may be brought on by hemorrhage into this tissue.

The author explains on this basis the occurrence at one time of supperative or gangrenous appendicitis, and the non-supperative variety at another time.

Riedel does not believe that the healthy appendix free from foreign bodies ever takes on the conditions spoken of as appendicitis nor does he believe the catarrhal condition extending from the caecum ever alters the histologic structure of the organ.

The article is extensive and comprehensive and worthy of deep attention.

Regarding intestinal obstruction following the use of the drain, one should be sure that the manipulation and handling of the gut are not more responsible for the obstruction, than the effects the drain produces in that direction.

This, I think, can be very often avoided by recognizing the position and surroundings of the appendix, at once and going for it directly, without breaking up any adhesions more than is absolutely necessary to free it.

Dr. Kirby: By careful and regular taking of the temperature in the rectum and mouth simultaneously and careful records of same kept, we frequently find the temperature in the rectum and mouth in health to be the same. As to the technique for removal of the appendix, there are many different ways in which this organ may be removed. If done in a clean way and within reasonable time as in operation, there is no gravity whatever in simple cases.

As to large abscesses, I think too little attention is paid to digital examination of the rectum by surgeons in cases of appendicitis, as there is as much to be found out regarding the male pelvic organ by rectal examination as there is concerning the female by similar procedures.

The obstruction in the bowels is due, of course, to adhesions. As we all know those adhesions are brought about by anything which acts as an irritation and causes the formation of fibrine on the peritoneal coats. Gauze by pressure and by its presence being a foreign body, undoubtedly contributes to this condition. Obstruction of the bowels complete is seldom seen in clean operations in the abdominal cavity for any other cause. It occasionally does happen, but it is extremely rare, and it is only where there is marked evidence of peritonitis and strong adhesions that this condition is met, and then most frequently is it in cases of appendicitis.

METHODS OF ESTABLISHING HEARING IN DEAF MUTES.

By M. M. STAPLES, M. D. Macon, Ga.

Mr. President and Members of the Medical Society of the State of North Carolina:

I beg to present for your consideration five of eighteen mutes, who have come to me for treatment in the past three years.

Of this number twelve were said to have been congenital and the others gave histories of middle ear disease, except one who had had menigitis. I shall illustrate this paper with photographs of some of these patients.

A brief history will be given of each together with the technique of procedure and a statement of results. The patients I have had all came irregularly for treatment and nine came one time only, so you will readily see that it is impossible to make a reliable estimate of the per centage of cures that might follow treatment of a more reliable class of these unfortunates.

There were three others whose hearing would have developed had they been other than negroes of a low class. It was three years ago when I first presented this young man to the Macon Medical Society. His name is Ammy McBain and he came for treatment in the fall of '98. He was then eighteen years of age and gave a history of congenital deaf-mutism. An examination of his ears showed a normal condition of the membrana tympani and all the visible structures. In the nose was enlarged turbinated bones and there were adenoids in the pharynx. Bone conduction was normal and he had hearing for very loud noise in one ear. Air from Politzers bag passed readily through the eustachian tubes to the middle ears. There are no deaf members of his family and no history of unusual sickness or disease. Treatment was begun by removal of the turbinated bones of one nostril and cauterizing near the pharyngeal openings of the eustachian tubes follwed by inhalations of volatilized menthol, ten grains to the ounce of liquid alboline once a day. After waiting two weeks for results from the above operations I began to rarify the air in the middle ears by the use of rubber tubes, one end of which was held air tight in the nostrils, an air pump attached to the other end, and the patient told to swallow. My

idea being to massage the labyrinth. This was kept up once a day for two months before I discovered the patient could hear, after that twice a week for several months, during which time hearing improved gradually until the tick of a watch was heard at several inches, he could hear through the telephone and began to talk.

At first I believed the result due to the removal of the turbinate bones, but I found that he heard in one ear only and that on the opposite side to the operation. Then it was attributed to cautery operations done on the lips of the eustachian tubes until McBain cleared the matter by telling me that he began hearing suddenly after a treatment by the pump and tubes, and since that time I have proven it on other patients as you will see. I did not operate on the adenoids as they did not seem to be obstructing and the operation had failed to give results when others had removed them in similar cases. His mind cleared as hearing improved and he has grown from a stupid looking youth to an unusually bright and alert young man.

The next to have hearing and speech established is Geo. Jackson Benton, the seven year old son and only child of Mr. H. J. Benton of Jenkinsburg, Ga. He was brought to me in 1900 and gave a history of congenital deaf-mutism and a scrofulous diathesis as you may observe from the scars left from broken down glands. On examination the membrana tympani seemed to be normal as did all the other visible structures of the ear. He had an actue catarrhal condition of the nose and throat and gave evidence of adenoids, for which I did not inspect nor operate because by doing so, I would have forfeited his confidence and co-operation and for other reasons heretofore given.

Treatment was begun by inhalation of weak volatilized menthol and alboline solution for the catarrhal condition, followed by the use of the pump and a bifurcated tube, one branch being placed air tight in the nose, the other likewise in each ear alternately, and while the patient was in the act of swallowing the pump was used to rarify the air in the middle ears. This was continued once a day for five days, at which time I discovered hearing. Treatment was then given once a week for two months, then once a month for three months. His hearing

improved gradually and at the present time he can hear the tick of a watch at several inches, can speak distinctly and goes to school every day with normal children.

This young lady, Kitty Smith, was sent to me by Dr. E. G. Ferguson, of Macon, Ga., in 1900, when she was twelve years of age. Her monther said she had been born deaf. Her general health had been good and she had been in the Georgia school for the deaf four years and been sent home with the statement that she was too stupid to learn. Her sister, two years younger, is in splendid physical condition. Her mother has had nastygmus from birth. On inspection I found nothing abnormal except that she could not hear sounds by aerial conduction. Bone conduction was good. Membrana tympani normal as was also the nose and throat.

Treatment consisted of rarifying the air in the middle ear as already described, except that the tube had four branches, one for each nostril and ears. This procedure had scarcely begun, however, before there was a sharp cry from her and she took the tubes quickly from the ears. I made immediate inspection and finding nothing unusual tested and found that she could hear. I took her back to the office of Dr. Ferguson and he verifies the above statement. When she returned the next day there was considerable inflamatory reaction in one ear, which yielded promptly to treatment.

I have treated her a few times since at irregular intervals and she hears about as well as any of the others with both ears, but does not articulate so well.

Frank Evans, of Macon, Ga., came for treatment January 1st, 1902, when he was two and a half years of age. His mother said he was congenitally deaf and was very small at birth and had not been strong.

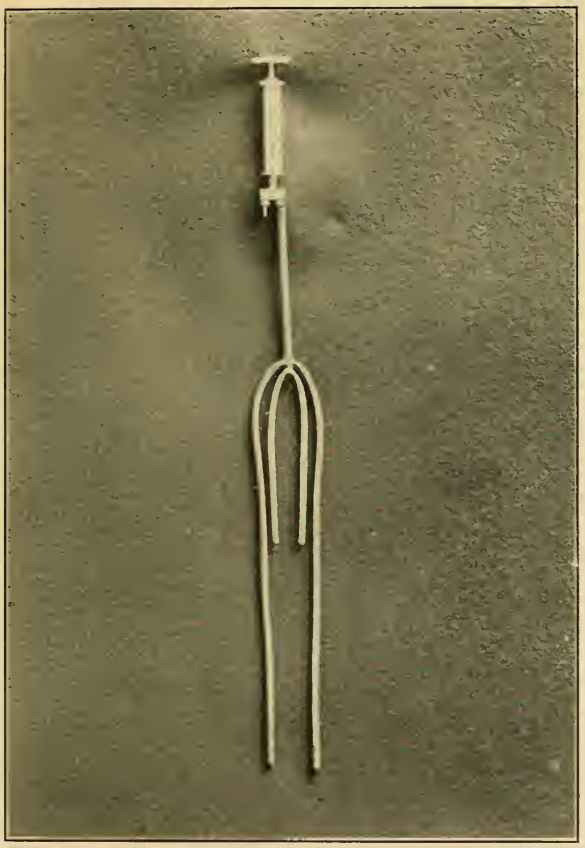
Inspection showed the membranes of the ear normal with good bone conduction. Aerial conduction was nil so far as I could tell. He made no effort to speak and had an acute catarrh of the nose and throat and I suspect he had adenoids. I did not examine. There was no specific history. He had on his hands and lips hard heavy scabs on which his mother was directed to use hydrogen dioxide and warm water. I ordered

small doses of the iodide of potash internally, and found his digestion would not permit its use. I then tried the hypophosphites and the sores healed. Weak solution of menthol was inhaled for the catarrah and I used the pump and tubes having to make him cry in order to rarify the middle ear. Treatment was kept up under difficulties and gave no promise of results until the third day of last February, when his mother expressed a belief that he could hear and it was gratifying to find him listening to sounds and responding to tests he had before ignored. It is not possible to estimate just how acutely he hears, but I hope that it will become almost, if not quite normal.

Clifford Davis was brought for treatment on the first day of the present month (April, 1902). She is seven years of age. At eight months she became deaf from the effects of measles and there was a discharge from both ears for about two years.

On examination her general health was found to be good. Bone conduction of sound was normal and she could hear words spoken in a loud voice directly in her ears. Membrana tympani were flacid and of a dead white appearance. She could speak a few words and would be classed as a semi-mute. Her metal condition was dull and irritable, and she breathed through her mouth night and day.

The diagnosis in such cases is easy, adenoids in the pharynx. Treatment consisted in removal of the adenoids and opening of the eustachian canals. The only variation from the method usually practiced being the use of the tubes and pump instead of Politzers bag to open the canal and pump out any secretion that might be retained in the middle ears. The child began at once to improve and she now hears ordinary conversation and uses sentences to express herself. I expect her to have soon normal hearing and speech. In treating cases of deaf-mutism it is my practice to operate promptly for adenoids when I can not prove to my entire satisfaction that they are not obstructing, otherwise I proceed along other lines of treatment until I find I am getting no good results, then if adenoids are present I remove them with the hope that they are after all the cause, but I have gotten no good results from an operation in deaf-mutism except where the adenoids were an evident cause, as in this case.



STAPLER'S RAREFYER

In the absence of definite knowledge of the altered relations following the use of the pump and tubes, I offer the following theory:

If a tube with four branches have those branches fitted air tight into nostrils and ears and an air pump attached to the other end be used to rarify the air in the middle ears, the patient being in the act of swallowing, the effect will be to lessen to a like degree and at the same time the atmospheric pressure in the external auditory canals and middle ears; the membrana tympani and chain of bones will be passive and the footplate of the stapes will be raised by the expansion of fluids beneath. The secretory glands supplying the cavities of the endolymph and perilymph will be stimulated to fill the utricle and sacule, membranous and bony canals and the stapes will be supported in its raised position and aerial conduction established for some deaf ears.

A crude ocular demonstration of this theory may be made by placing in a bottle partially collapsed air tight rubber bags, and when the air in the bottle is rarified the collapsed tubes will be distended to their full capacity. Now, if fluid be injected into the bags they will retain their distention though the air pressure is again fifteen pounds to the square inch, and a like condition may prevail when the sacule, utricle and membranous canals are filled.

THE TUBES.

The tube having four branches, of which I have spoken, I desire now to show you and to call your attention to the scope of its usefulness.

Besides the case I have shown, it covers the field and protects the ears in that class of cases where we use Politzers bag to open the eustachian tubes. It is a better method, because it applies the pressure to both sides of the membrana at the same instant in an equal degree, and the force that is brought to bear can do no harm and cause no pain, and in many of these cases you will find it just as effectual if you will rarify instead of inflating, and you will avoid the danger of forcing mucus into the middle ear, which is no small matter. If it be attached to a compressed air tank the pressure may be guaged and it does the work of an air cabinet wherein patients are subjected to air pressures for sclerosis of

the ear. When there is serous fluid in the middle ear it may be removed by the suction of an air pump attached, and in the same manner the tear ducts and frontal synus may be cleared of obstructions. For massaging the labyrinth it is the only effective method I have ever known.

I commend it to the profession as a useful instrument covering a wide field.

DISCUSSION.

Dr. Lewis: I would like to express my appreciation of the remarks and demonstrations given by Dr. Staples, and to say that we have found it very interesting—and the work he has accomplished is certainly very striking—the restoration of the hearing in about 33 per cent. of the cases he has tried is a very remarkable record.

I move that he be requested to furnish the Society a copy of his paper for publication in our proceedings.

Dr. Galloway: I don't like to take up the time of the Society, but would like to join in seconding the motion, and also to express my great gratification at Dr. Staples being here with us and demonstrating, in my opinion, an admirable plan for relieving deafness, and trust the doctors have also been benefitted, and will try it and find good results. I will try it myself, and feel confident of success in many cases.

METHOD OF USING

Report of the Section on Medical Jurisprudence and State Medicine.

CHAIRMAN'S REPORT.

J. L. NICHOLSON, Richlands, N. C.

Medical jurisprudence, it has been well said, "owes its power to knowledge derived from every branch of medicine; but the law determines how far this power shall be utilized in the administration of justice." The century just closed opened in America with an almost complete neglect of this department of medicine. It is common knowledge that little significance was attached in those days, either by bench or bar, to the views or opinions of medical men. And to say that the science of medical jurisprudence with us, even up to this, has signally failed to command that recognition due it, even from the medical profession itself, would be stating a truth well known to the least of us. Even our medical schools have been quite neglectful as to our training for the duties of medical experts and as to rights as witnesses.

The first sound teaching of legal medicine in any country was done in the early part of the 17th century by the splendid diplomat, scholar and physician, Paul Zachias, of Italy, whose writings on the elementary truths of the science could be read now with much interest.

According to Clark Bell, "Germany has had for more than two centuries an organization of medico-legal officials, who are required by law to be qualified by an especial education not only to procure the medical facts needed by the courts, but to estimate their weight for the benefit of the courts." To favorable legislation, and to the friendly care of the government, Germany's preeminence in legal medicine is to a great extent due.

France, surpassed by no nation in the culture and advancement of medical science, in the latter half of the 16th and 17th centuries enacted laws which formed the basis to the study, culture and development of this branch of medicine.

Prior to the century now gone, Great Britain had given but

little attention to medico-legal questions, and she unfortunately transmitted to her American colonies "laws," says Prof. Chaille, "barbarously conspicuous for the absence of provisions to apply medical knowledge to the administration of justice." With this unenviable inheritance to begin with, and with the States leaving the culture of medical science almost solely to individual enterprise, making no demand for and offering no inducement to competent medical experts, who can wonder at the backward development so apparent even to this day of this branch of State medicine.

Justice, during the middle ages, was in great part an administration of retaliating punishment. For criminals condemned to death all kinds of cruel tortures were cunningly invented, so that their suffering in death could be intensified and prolonged. Equally revolting was the superstition and ignorance of that period as displayed in medico-legal literature and in the decisions of the courts touching medical questions. Doctors with all seriousness discussed whether a woman could be got with child by the devil or by a dream. French judges legitimized an infant in a case where the husband had been separated four years from the mother, on the ground that the child owed its paternity to a dream. Doctors taught that grossly deformed infants had a beastial parentage, and judges, but little more than 100 years ago, held that such children had "no inheritable blood."

In the State of New York, even as late as 1824, the court accepted the long admitted doctrine that, in the presence of the murderer his victim's wounds "did open their congealed mouths and bleed afresh."

"The highest medico-legal authorities," says Chaille in his centennial address, of which I make free use, taught belief in ghosts, witches, and possession by the devil, and united with the clergy until 1752 in denouncing all disbelievers thereof as heretics and atheists. They found demoniacs for the jails and the stake, where we find patients for the doctor and the asylum.

The distinguished medico-legist, Hoffman, commended to the barbarity of the law those who vomited nails, hair, wax, glass or leather, as unquestioned witches. Lord Chancellor Blackstone, near the close of the 18th century, taught that "to deny the

existence of witchcraft and sorcery is at once to flatly contradict the revealed word of God."

Certainly since the early part of the 19th century we have moved away from these revolting practices and teachings. So much so that we can exclaim with Carlye, "Behold, a new era has come; the future is all the brighter that the past was base."

While the States designedly have done but little through direct legislation to promote and develop forensic medicine, the writings and labors of Benjamin Rush, Theodore Beck, Isaac Ray, Alfred Taylor, and many others, have influenced society and law to an extent difficult to overestimate. Scarcely less valuable have been the services of our chemists, as Wormley, Reese, Vaughan, Leffman, Doremus, in the development of toxicology, making it a distinct department of State medicine.

In this day of scientific medicine, when the physician, with the increasing confidence of society and the courts, is called upon to give expert testimony in thousands of cases involving medico-legal autopsies, malpractice, abortion, poisoning, railway accidents, etc., the course of study offered by our schools of medicine on this line is not commensurate with the importance of the subject. There is scarcely a single American college in which medical jurisprudence holds a distinct chair as an independent branch of medicine. The average time devoted to its distinct teaching by twenty of our best schools throughout the prescribed four years' course of study, as shown by the examination of the different catalogues, aggregate but little more than that found in the course of a single day and night. This fact, however, should be no surprise, since the State makes no specific demand for medico-legal experts, every practitioner being adjudged to have sufficient knowledge to furnish the best evidence to the courts. No wonder, then, that the profession is often humiliated by the partisan feelings and contradictory testimony and opinions frequently displayed by medical men as witnesses.

To the Board of Medical Examiners the State has entrusted the full responsibility of providing physicians who in every way shall be qualified for the performance of this important work. The ever-increasing efficiency of their licentiates declares unmis-

takably the immense benefit these Boards are to the State and to the profession.

These Examining Boards now found in many States of the Union have been an effective barrier against the entrance of quacks and half-educated men into the profession. To meet the requirements of these Boards many of our colleges have been driven, as it were, to lengthen their course of lectures and improve their method of instruction. With such power fot good in their hands, with a concert of action, the remedy is theirs to secure from the schools the proper attention to the study of medical jurisprudence.

Another branch of State medicine, that of governmental power to protect public health, and the exercise of this power through Federal, State, County and Municipal health officers has of late years developed into great prominence and usefulness.

The first Public Health Congress in America was held scarcely a quarter of a century ago. Today there exists health boards in almost every State and Province of North America. National quarantine service co-operates with State health officials in guarding thousands of miles of seaboard from the invasion of contagious diseases. Local boards well nigh innumerable are constantly improving local sanitary conditions and watching in ceaseless vigils for the black birth of contagious epidemics which hitherto have spread unmolested, carrying death and dismay in their path.

The practical applications of the innumerable discoveries made in the field of biology within the last few years have rendered far more efficient governmental regulations of many vital sanitary questions. "Science desires not isolation, but freely combines with every effort toward the bettering of man's estate."

The last twenty-five years have been truly called the "golden age of public health." Human suffering has been wonderfully mitigated, and human life perceptibly lengthened under the guiding influence of modern sanitation. Yet, how slow the people are to apply to their lives laws as old as the decalog—the laws of health.

The fatalistic belief that disease is the manifestation of God's wrath toward man, punishment for some specific sin, was for centuries so deep-seated that preventive medicine could not have

been applied to any effect. "Master, who did sin, this man or his parents, that he was born blind?" was a question asked some 2,000 years ago, and carries with it this idea—that human affliction is the unavoidable penalty for sins committed. When pressed by the cruel scourge of some pestilence, all sorts of self-inflicted punishments were practiced to appease Divine wrath.

According to Kober, the faculty of Paris attributed the occurrence of the bubonic plague in 1345 to the conjunction of planets on a certain day. The faculty of Liepsig, with equal gravity, asserted that it was connected with earthquakes, unseen waves of air, inundations, etc.

As late as 1760 the deposits of ordure near dwellinge were considered healthful on the theory that the filth absorbed the unwholesome particles of the air, which otherwise would be taken into the human system. However, the repeated visitation of the Oriental scourge finally evoked from all Europe efforts at sanitary reform, and laws for health seem to have been the outcome of pestilence. Man has been taught to respect and rightly observe nature's laws, only by the very harshness of nature herself.

Society now, through modern sanitary teaching, is beginning to understand that every death caused by unsanitary conditions is but a natural consequence; and that the toleration of such malignant conditions which are capable of being eradicated, can be considered in its essence scarcely less than a crime.

Within the last generation the immense work of the American Public Health Association, the American Medical Association, through its Section on State Medicine, the American Sanitary Association, together with the labors of many other National and State Associations and Sanitary Conventions, have been the leading factors in moulding and educating public opinion in matters of sanitation and in securing the enactment of proper health laws. So rapid has been our progress in this respect that it has been seriously said that no other country in the world is better equipped for effective sanitary service than the United States.

The danger to public health in default of *rural hygiene* is still a pressing one, one which demands the serious thought of sanitary officers and law-makers alike.

Startling as should seem the statement, but nevertheless it is

true, that the most healthful residence is no longer to be found in the country but in the great cities. The one factor of water supply from private wells, surrounded by a soil long polluted from continuous habitation readily accounts for the common occurrence of so much typhoid fever among our country people. Probably three cases of this fever for every single case due to unwholesome public water supply may be attributed directly to the use of water from unguarded private wells. The efforts made by sanitary officials to instruct our people how to protect their drinking water from animal searage have not as yet borne much fruit.

The people must learn for their own good how to protect their private wells from poisonous bacterial infection, but they must also bear in mind that marketable products such as fresh meats, milk and butter when washed with unwholesome water become on the market unthought of dangers to the health of others. Moreover, the continued existence of local nuisances together with the frequently slow and half-indifferent attention to outbreaks of contagious diseases are not matters trivial to the public health. A more careful sanitary care over the public water-sheds, the rigid enforcement of laws abating the existence of local nuisances; placing the responsibility legally upon the individual who carelessly spreads a contagious disease with which he may be affected, thus causing every man to realize that he is under obligation to society not to imperil the life and health of others, and that the law has the right to enforce the observance of this duty, should tend to avoid the evil consequences of such conditions.

The enforcement of the law announced some years ago by Judge Dixon, of New Jersey, would exert a most salutary effect. It is this: "If a man conscious that he carries about with him the germs of a contagious disease, recklessly expose the health and the lives of others he is a public nuisance and a criminal, and may be held responsible for his conduct; and further, that where a person knowingly communicates a contagious disease to another and death results, the crime is that of manslaughter. (Sanitarian, Vol. xi, 74.)

The eradication of preventable diseases is to-day the highest aim of scientific medicine.

First of all our people must be made familiar with the conditions of home life which favor the production of disease. Any evil is said to be half removed when its cause is thoroughly exposed. To accomplish this work, in rural districts especially, where the benefits of enforced sanitation has not been experienced is a problem of no small magnitude. Its solution we believe is to be found directly and only through a more general sanitary education.

Education is the shortest road to ideal sanitation.

For while the State has a well established right to inforce laws that ensure the preservation of public health, even though personal and property rights be directly interfered with, all such laws to be properly effective must be sustained by an appreciative public intelligence and must be in harmony with public sentiment. The steady diminution of tuberculosis now seen in almost every civilized state attributable solely to the fact that knowledge of its contagious character, and the means of its conveyance, has been widely taught the public.

A prominent feature of this idea of education includes, in the first place, an increased efficiency of health officers, State, Municipal and County. A course of study leading to the degree of Doctor of Health or Medical Sanitation is becoming a pressing necessity. Men, having neither the necessary qualifications, nor sufficient interest in their special duties to prompt any increase in their efficiency, are in many instances filling positions on Health Boards. A little office and still less pay, goes a long ways with some of us. Has North Carolina a single especially educated sanitarian within her borders? The full time of the Secretary to the State Board of Health could be profatably devoted to this one question of disseminating sanitary knowledge. By lectures to the public and by personal contact and work with County and Municipal health officers and with our teachers and schools, he would prove a factor of increased benefit to the State.

Within the borders of North Carolina there are but a few less than 700,000 children of school age—of this number almost half a million are enrolled in the public schools. Did ever a better op-

portunity present itself for the diffusion of the knowledge so vital to the welfare and prosperity of the people? You tell me that the State does provide for the teaching of the elements of hygiene. The course of study is very limited, and the teachers are but little more acquainted with the principles of public hygiene than is the pupil. Let this instruction be enlarged and become commensurate with its importance. Then will this indifference and ignorance give way to a higher, healther and more cleanly life.

No less valuable could be the beneficial results if the question of sanitation occupied a prominent place in the instruction given by our high schools, colleges and universities. A short series of lectures on the principles of hygiene and school and home sanitation should be provided especially for school teachers.

Our present knowledge concerning the mosquito as a positive danger to society, by reason of its ability to transmit certain diseases to the human organism is of the highest significance to public health. It has been repeatedly demonstrated beyond the possibility of a doubt that the Anopheles mosquito is a preminent, if not the only agent, in the transmission of malaria to man. The theories hitherto in vogue that drinking water, and the so called "miasmatic exhalations of the night" are received now with skepticism, if not absolute disbelief. Manifestly then the removal of the well known conditions forming the propagation of this dangerous and annoying insect is a pressing duty. The drainage and filling of all pools of stagnant water, the systematic treatment by oils of those which cannot be so teated, and the introduction of fishes whose favorite food is the mosquito's larvæ, are effective means at our command to the accomplishment of this work. Sulphur dioxide gas, with its remarkable powers of penetrating all kinds of fabrics, has proven itself the most reliable agent known in the disinfection of dwellings against malaria and all other insect borne diseases. The very common prevalence of malarial affections in most sections, certainly of Eastern North Carolina, make the removal of its immediate cause a question of vital importance. Shall the mere right of posessicn imply to the fortunate land owner the privilege of harboring within his domain these conditions which foster the production of this malady?

Conditions which if tolerated will inevitably endanger the health of others.

Equally convincing, and even more far-reaching in its sanitary bearing, is the proof obtained through a series of scientific observations recently instituted by the medical department of our military government in Cuba, that the mosquito, culex fasciatus, is the one prolific agent in the spread of yellow fever.

Dr. Reed and his colleagues, who made these investigations declare as facts that:

1. "Yellow fever is transmitted to the non-immune individual by means of the bite of the mosquito (c. fasciatus) that has previously fed on the blood of those sick with this disease.

2. That "yellow fever is not conveyed by formites, hence disinfection of articles of clothing, bedding, or merchandise, supposedly contaminated by contact with those sick with this disease is unnecessary.

3. "A house may be said to be infected with yellow fever only when there are present within its walls contaminated mosquitoes capable of conveying the parisite of this disease.

4. "The spread of yellow fever can be most effectually controlled by measures directed to the destruction of mosquitoes, and the protection of the sick against the bite of these insects."

The practical application of these observations was made last year by Major Gorgas in the sanitary management of Havana, the city where yellow fever had hitherto existed for near two centuries in defiance of all previous efforts at sanitation. The usual quarantine regulations and interference with commerce were discontinued; the most thorough measures were itstituted to exterminate the mosquitoes and to abolish their breeding places, and those sick with the fever were carefully screened from the further bite of the mosquito. The infected dewellings were disinfected by the fumes of pyrethnim for the extermination of the poisoned mosquitoes.

The result of this campaign against mosquitoes was that only eighteen deaths occurred during the whole year, and there has not been a single case of yellow fever in the city since September 28th, 1901, now eight months ago.

In view of these facts, it appears that the expensive and annoying methods of disinfection and quarantine heretofore enforced

for the suppression of yellow fever epidemics might be greatly modified to say the least. While further and more extended observations would seem to be needful to justify the abolition of present sanitary measures used to control yellow fever outbreaks, certainly these are enough to convince all health officials, especially of our Southern cities, of the imperative necessity of adopting the best means of exterminating these pests and for the absolute prohibition of conditions favorable to their production.

The recent conclusions of Prof. Koch, viz., that bovine and human tuberculosis are different diseases and practically non-intercommunicable; that man has nothing to fear from tuberculosis of cattle, and hence it is needless to take further precautions against this supposed source of infection, are indeed significant doctrines. Hitherto we have been taught, and clinical evidence is yet abundant, that the heavy mortality in early childhood from tuberculous affection is due to the use of unsterilized milk of the tuberculous cow. That a great peril threatens humanity the world over in the existence of wide-spread bovine tuberculosis, is the belief formerly adhered to by the medical profession. The point at issue is a vital one, and we may fear lest the influence of such noted authority leads to a laxness on the part of health officials in the proper inspection of meats and milks which supply our cities and public institutions. The experiments of Chauveau performed some years ago, together with the recent expensive and convincing investigations of Bhering clearly contradict the conclusions reached by the German scientist. And even if it were demonstrated beyond a doubt that cattle are refractory to human tuberculosis, it does not necessarily follow that man is equally refractory to bovine tuberculosis. Clearly, then, there should be no relaxation of health regulations which restrict the sale of tuberculous food products. The thought is revolting, that meat contaminated with disease germs of whatever sort, should under any circumstances be offered for man's use.

The only safe and proper solution of the situation is the suppression of the sale or use of food products unless such products have been adjudged wholesome by competent health authorities.

The well-established and undisputed fact that tuberculosis is commnnicable from man to man chiefly through the agency of

dried sputa, leads undisputably to the conclusion that the State is under the highest obligation to separate the victims of this disease from other inmates in its charitable, correctional and penal institutions. Especially is this true of our hospitals for the insane, the inmates of which because of the very nature of their afflictions, have but little power of resisting bodily diseases. According to Mays, the insane, idiotic, epileptic and hysterical and members of their families are from three to five times more subject to consumption than are persons not burdened with nervous ailments.

A recent report made by the superintendent of an English insane asylum shows that by the removal of all consumptive patients to a separate building, he has been enabled to reduce the death rate from this disease within a few years in his hospital fully fiffy per cent. Scarcely less gratifying has been the effect following the same action of separating the tuberculous insane from the other inmates in the Illinois Southern Hospital for the Insane. The last bi-annual reports made by the superintendents of the three hospitals for the insane of North Carolina show that out of 214 deaths due to all causes which have occurred in these institutions, 22.7 per cent. were produced by the one disease tuberculosis. Notwithstanding the repeated appeals made to the Legislature of our State, no effective separation of these patients from the other inmates has yet been furnished, and our unfortunate and afflicted citizens are still exposed to this ever present and death dealing disease. No less shameful is the existence of these same conditions in the country homes for the aged and infirm throughout the State.

With these conditions before us—known to us as they are to no other class of North Carolinians—shall we not bend every energy and put forth every effort that we may with concerted action be instrumental in removing from our State the charge of gross neglect to our unfortunate brothers.

DISCUSSION.

Dr. Duffy: I regard Dr. Nicholson's paper as important and interesting.

Dr. Parrott: I consider Dr. Nicholson's paper a most valuable one, and we want it preserved and I move that it be referred to the Committee on Publication.

INEBRIETY, THE NECESSITY OF LEGAL ADJUDICATION, AND RESTRAINT OF INEBRIATES.

By CHAS. DUFFY, M. D., Newbern, N. C.

Mr. Chairman:

To the humanitarian on-looker of the events of every day life, no evil stands out in more glaring prominence or grotesqueness than the whiskey drink-evil. As an illustration, it is said "the drink bill of the United States in one year is nine hundred million dollars;" nine-tenths of all the crimes committed, it is estimated, are traceable to whiskey as a cause; four-fifths of all pauperism and about one-fourth of all cases of insanity. And when to these are added the number of idiots, imbeciles and degenerates that follow in its withering wake; and then the fruitful transmission of hereditary tendencies to the above enumerated curses, its effect on the family, on the State, in the care of the disabled and alienated, it stands out in destructive proportions of the most appalling kind.

It is universal experience of right thinking men, "that life is poisoned by it, the home is poisoned by it, politics is poisoned by it, society is poisoned by it," and yet in the face of this arraignment we find physiologists still wrangling over the question as to whether alcohol is a food or a poison.

In June, 1899, Prof. Atwater, of Wesleyan University, reported before the Middletown (Conn.) Scientific Association some experiments performed under his directions, made with the purpose of ascertaining the nutritive status of alcohol, by which he found that a part of the stuff was oxodized in the body. Basing his definition of a food on this hypothesis, he placed alcohol once more in the category of foods.

To do him justice he limits the quantity masquerading as a food to two and a half ounces a day. Up to the time that these experiments were made, most physiologists were agreed that it had little or no food value in any quantity, therefore it is not surprising that Prof. Atwater's conclusions brought consternation to the camp of the anti-alcholic hosts, and some criticisms, not very complimentary to the Professor, have been indulged in. Amidst a storm of protests against his classification, one of Prof. Atwater's critics characterized this alcoholic food as the "food of

hell," and when I see how our criminal records and penitentiaries, our jails, our poor-houses, etc., thrive and fatten on it, I am dispose to agree with him. A food that lets into the fireside the chilly blasts of dispair and want, that drives the mother and children penniless into the streets, could hardly be classed as a healthful food. What addition does it make to the human body? Does it increase actual strength or muscular tissue? Granting that it increases the fatty tissue, is blubber of much value in any race or contest requiring the best physical condition? The giant, John Sullivan, might answer. Every one knows that if a man takes a drink of whiskey when he is cold or tired, he momentarily feels warmed and refreshed, but does not the tired horse feel the same stimulant effect when stricken with the lash? It is a cheat, a delusion—the same delusion which it shows when it makes the weak man feel he is a giant, or the poor man feel he is a Crœsus, or the fool feel he is an intellectual brilliant.

Numerous experiments have proved that men endure fatigue and exposure to cold better, accomplish a greater amount of muscle work, without alcohol than with it, that even in small quantities it diminishes the mental functions, increasing the number of mistakes made, lessening the power of concentration, reflection, the association of ideas, the memory and logic.

Let us now revert to another phase of the subject, where, as medical men, we are specially interested. I refer to alcohol as a factor in the causation of disease. For years, through our boards of health, and as individuals, we have been waging war against the pestilences, contagious and infectious. Along these lines we have done service in the cause of humanity which can never be renumerated or sufficiently appreciated. We jump on the typhoid bacillus with both feet wherever we find it. We go for smallpox, yellow fever, cholera, etc., the moment they make their appearance in our midst, with Federal, State and Municipal forces at our back, and we generally vanquish them. Do you think these pestilences are more harmful than whiskey drinking? Need I ask you to run over the list of organs in the human body and try if you can pick out one that is proof against the baleful influences of continuous whiskey drinking? Can not you recall from your experience many cases of cerebral and other organic degenera-

tions, spinal trophic affections, ataxias, apoplexies, diseases of the lungs, liver, stomach, spleen, kidneys, generative organs, and the train of disorders consequent on these diseases, that were directly traceable to alcohol as a determining cause? Then it is equally potent as an indirect cause; for example, the otherwise sane and moral man under the influence of liquor will expose himself to the contagion of syphilis and other destructive and loathsome diseases, accidents of all kinds, etc.

I know you can refer me to instances of very old men who have drank whiskey all their lives and have remained comparatively healthy, but, I might rejoin, I have known men who have been through many hard fought battles and have come out without a scratch. These exceptions do not carry with them the inference that these occupations are free from danger or conductive to long life. If the infringement of the laws of nature, without exception, were summarily followed by the enforcement of its penalty, there is scarcely a question that these laws would not so often be violated. If every man who goes into battle should be killed, there would soon be no more wars. Sane men do not usually take the exceptions to the rule, as the guide of their conduct.

I do not wish to be understood as denying that there is any useful place in the economy for alcohol, on the contrary I admit it has its place as a medicine, and in the arts. Like strychnia, opium, arsenic, etc., there are conditions in which most physicians feel it is indispensable. It is not the legitimate use of this or any other poison I object to, but the indiscriminate or habitual use of it as a beverage, with the mistaken notion that it is good for all the ills that the flesh is heir to. This notion, when it dominates the victim, usually bears him on to confirmed inebriety, where he looses all self control, and where he is persued by an irresistible thirst for liquor.

This drink craving, as we all know, is one of the most difficult conditions to overcome the physician has to deal with, and on this account, if for no other reason, we should heed our responsibility in the premises.

In prescribing it we should give no more than the necessity requires, always hedging about its use with warnings of its subtile

and dangerous consequences when continued beyond its strictly medicinal purposes.

But I need not continue to discuss the demerits of alcohol before this audience. I have already said enough to fix it as the king of evils, and I think it is not hard to reach the inference that you have not on your list of preventable diseases any one more far reaching or destructive in its influences than this one now under consideration.

Do we not owe it to ourselves and the high purposes of our calling to put forth our hands on the body of this monster and shear him of his power? Is there any sound reason why we should trouble ourselves about small pox, yellow fever, and such like plagues and let alcohol go unnoticed?

Mr. Chairman, I believe the Medical Society of North Carolina is strong enough to grapple with this monster. Fifty years ago you set out to give the people of the State good doctors, and today at every cross-road or backwoods country section you can find them the equal of those in the cities. You then turned your attention to the sanitary needs of the people, and although the difficulties in the way seemed almost insurmountable, you have today a Board of Health doing glorious service to the State. I had the honor, Mr. Chairman, to be one of the committee who organized this Board and formulated the list of diseases concerning which your inquiries and investigations are now being made. I am sorry, sir, to confess that this list is incomplete, and respectfully ask that you amend it, and place thereon inebriety or alcoholic intoxication, that your reports may show the part this agent plays in the death roll of our State. And in the name of good morals, in the name of good government, and in the name of the women and children who writhe under its galling yoke, I ask each member of this Society to put forth his unrelenting efforts to stay the march of this chief of scourges of the human race.

And what can be done for the inebriate himself? No matter how good a man he may be when sober, he is, as a rule, unsafe to be left to go at large in the community when under the influence of liquor. He is an irresponsible and dangerous man. He is cruel to his beast, or his best friend, insisting often that he is not drunk, or may be that he has "not touched a drop in a

week." In this condition and when openly committing acts of violence, the State may arrest him under a criminal process, but as is too often the case, acts of cruelty and violence committed in the home, away from the observance of the eyes of the law, where the victims are his helpless wife and children, go unpunished and unrestrained. Such a man, if no more than once removed from a fiend, when in his sane condition, would bless the hand that would restrain him from such brutality and violence. Can there be any satisfactory reason why such a man be left to pursue his murderous tendencies while the insane or criminal of another class are taken into State custody and restraint? This inconsistency was recognized by the State authorities many years ago, when an enactment was passed: Public Laws North Carolina, 1879, providing for the arrest and control of inebriates in certain cases. Section 1671 of these laws defines an inebriate as "Any person who habitually, whether continuously or periodically, indulges in the use of intoxicating liquors to such an extent as to stupefy his mind and to render him incompetent to transact ordinary business, with safety to his estate, shall be deemed an inebriate within the meaning of this chapter: Provided the habit of indulging in such use shall have been, at the time of inquisition, of at least one year's standing."

This definition seems insufficient to meet the reqirements under consideration in this paper. Many inebriates have no estate and therefore would not come under the provisions of the act; besides his own person, his family and his neighbors, should have at least the same protective care of the State, as his goods and chattles. To cover this defect I submit the following as an amendment to this section: To wit: Be it enacted that section 1671 of the Code be amended by striking out the word "to" in line two and the remainder of said section, and inserting the words to such extent, either periodically or continuously, as to render him incompetent to transact his ordinary business with safety to his estate, or to render him obnoxious or dangerous to his family or to the community, or which periodically, at intervals or continuously renders him cruel to or neglectful of his family, shall be deemed an inebrate.

Section 2. That wherever the word inebriate is used in said

chapter, or in any of the laws amendatory thereto, it shall be construed to mean any person who habitually whether continuously or periodically indulges in the excessive use of intoxicating liquors or narcotics.

With some such statutes as this, many cases of inebriety could be reached which are now without the pale of the law. Humanity and sympathy for the poor victim of this incontrolable vice, cries aloud for such supervison and control as will restrain him from the continued iudulgence of his morbid appetite; thereby placing him beyond the reach of the means of destroying himse or continuing a menace and a nuisance to society at large.

If a man should steal a chicken or a water-melon, only one time, the dignity of the State is offended, and no matter what has been the moving cause, whether to appease his hunger or to feed a starving family, he is adjudged a criminal, and it may be, sentenced to the penitentiary, the asylum for the cure of crime, not with the purpose of torturing him or vindicatively punishing him, but with the purpose of correcting his criminal tendencies and returning him to the community a reformed and law abiding citizen. Very few people question the corrective agency of this institution, very few can doubt the propriety and justice of thus arresting and restraining the criminal. Do you know why? Is it not that these unlawful acts as defined by the Code have long been held as infringments of personal rights and violations of the moral code? Now when you compare the many cases of petit larceny, that are so promptly dealt with and are so largely the care and concern of the police regulations of the State, with the consequences of whiskey drinking, and especially the part it plays in such acts as are usually overlooked by these authorities, are you not driven to doubt the even-handedness of justice, as now outlined by our penal code, in dealing with these conditions? Bear in mind, Mr. Chairman, that it is not the purpose of the context of this paper to punish the inebrate because he indulges in the excessive use of liquor, but to hinder or prevent him from becoming a criminal before the law, to restrain him from further indulgence in a habit that will of necessity result in his committing acts of violence and other crimes, to cure him and restore him to a condition of sobriety

and decency. Examined from this standpoint the proposed definition of an inebriate cannot be constrained as abridging his private liberty, further than is absolutely necessary for his own, and the public welfare.

The establishment of well regulated Inebriate Homes under State supervision, for the care of such cases, would most probably work incalculable benefit both to the inebriate and to the State.

The inebriate himself would bless the hand that would thus stay his course, downward to perdition and despair. His poor wife and children would sing praises to the power that would send back to their homes a regenerated normal human being, in the place of a fiend, and the gain to the State, of converting one drunkard from every county, into a useful citizen, cannot be computed.

DISCUSSION.

Dr. Murphy: I don't propose to discuss any part of Dr. Duffy's thoughtful paper except that part which has reference to what shall be done with inebriates, having had a limited experience with their charge and treatment.

The Constitution of North Carolina ratified in 1876, makes it obligatory on the Legislature to provide for this class, saying that inebriates *shall* be provided for and that the insane *may* be. The legislators persistently violated their oaths until 1891. The General Assembly of that year permitted the Morganton Hospital to use certain rooms built for private patients for inebriates, provided they would pay the hospital for their treatment. The experiment—for it was only an experiment—resulted in the hardest cases being sent, and not very many of these.

The State of Massachusetts has erected buildings at Foxboro maintained at State expense, for inebriates. These people are committed by legal process for a certain period, and I think they are compelled to remain longer if the authorities are not satisfied of a cure. The inebriates are made to work and are treated somewhat as convicts. I am not aware what good has been accomplished by this, the time since its establishment has not been long enough to come to any conclusion.

At Morganton we treated from 150 to 200 cases. The result has not been such as to encourage us to keep it up, for of all these cases, not more than half a dozen have remained sober citizens; but even with this meagre result, I am repaid for all the trouble I had with them, and they are a troublesome lot.

Our experiment at Morganton has been practically abandoned, for

besides the poor results, certain newspapers have attacked the two hospitals for caring for inebriates in harsh language, not warranted by facts, and the trouble they are to manage in a hospital for the insane—for they are, as a class, disorganizers—caused us to give it up willingly.

The care of the inebriate and his cure it seems to me to be equally as important as the insane. They are as great a menace to society and really do more harm and deserve the same care and protection. A restored inebriate is worth as much as a restored lunatic. The good accomplished is not limited to the inebriate alone, but his wife and family are relieved of worse than a care and the State has a producer instead of one who is more than a mere cumberer of the ground.

The doctor has stated 25 per cent. of insanity is directly caused by inebriety. This is only part of it. The wives and families of drunkards who become insane from abuse and neglect by the husband and father can properly be charged to the great cause of alcoholism. Then there is another fruitful source of insanity from this cause, to wit: the hereditary influence, for the progeny of a drunkard is as apt to be insane as the progeny of an insane man.

I call to mind now a poor woman who lived in the mountains of North Carolina, who had five or six children and a drunken husband. She had not only the care of the family to provide daily food for, but for her husband himself, and over and above the exhaustive child-bearing and lactation, what else could be expected, that she would break down. It would astonish you to know how many of these women there are. I hope that the public opinion will be aroused to the necessity of this growing evil and that something may be done.

Dr.———— moved that the paper be referred to the Committee on Publication.

Dr. Murphy: I hope the paper will not be disposed of in that formal way, but that the Society will do something to memoralize the Legislature or bring to the attention of the public the $900,000,000 spent every year for drink, and that probably is not one-fourth of the cost of it.

Dr. Cobb: I move that the paper be referred to the Committee on Legislation. I think it is of too much importance merely to be referred to the Committee on Publication. I think it should be referred to the Committee on Legislation.

MANAGEMENT OF SMALLPOX OUTBREAK.

By P. J. MACON, Warrenton, N. C.

Possibly nothing in the history of the State has so disturbed the minds of the profession and laity as has smallpox within the last four years.

It has traversed this old Commonwealth of ours from mountain to sea, and from border to border, making its unhallowed visits to every county and almost every city and hamlet in the State. Unwelcomed, but still it lingers and hovers around, until it has become domesticated, and seems to be a part of North Carolina property.

The subject is a complex one, comprising both the medical and legal side, and must be viewed from many aspects and also under many difficulties. To discuss this subject, one must be cautious, lest he wound the feelings of some, and yet to treat the matter trivially and indifferently would not be just to the one upon whom the responsibility of dealing with it involves.

The management of smallpox is a difficult and arduous task undertaken, never to be half paid or rewarded for the work, if done faithfully, conscientiously and well. The physician, to do his duty, must necessarily expose himself to many conditions, and under many adverse circumstances, exposure to weather, rain and storm, visit badly ventilated houses of filth and poverty. It seems impossible to accomplish anything with such surroundings.

But with an iron will and strong determination to conquor, as a successful physician must have, things seem to be done easily. The demon is here; we are about to meet him, unaware of his advent.

What is his history? An insidious, filthy, loathsome, spotted disease, that made its appearance in the world somewhere in the fourth century, history tells us. No one claims its ancestry positively. Some say it originated in China many years before Christ, while others claim that it existed in India from time immemorial. It is evident that it is hoary with age, but still active and apparently in the bloom of youth, will live many years yet and grow fat, from all indications.

They say America got it from Spain, (as we have other troubles) early in the sixteenth century. As there seems such

diversity of opinion as to its origin, I will not dwell longer on that line; suffice it to say, it is here, and I fear to stay, as it has received such a cordial reception and mild treatment. But why should we fold our arms in humble submission, when, it seems to me, we have the means to drive it from our door and exterminate it from the face of the earth?

One asks the question, "How, or in what way, can it be exterminated?" The answer is, by a thorough system of universal vaccination and rigid quarantine regulations.

If I may be pardoned for so doing, I will take up the first part of the answer, and relate a little personal experience:

On the 9th of March, 1899, I was called to see a young man, about 30 years of age, suffering with an intense headache, excruciating pains in back and limbs, nausea, very restless and nervous, complete anorexia, temperature, (sublingual) 105 Farenheit, heavily furred tongue, pulse 120. Questioned patient as to premonitory symptoms, said for two or three days had felt badly, with no inclination to move around, also loss of appetite. On the 8th, the day prior to my visit, had felt very chilly, in fact, thought he had a decided chill. As La Grippe was very prevalent, and no smallpox existed in our community, I very promptly diagnosed it La Grippe. I again visited him in the afternoon, and found him more comfortable, but very nervous. I had already prescribed, in the forenoon, the usual Grippe remedies, with directions for tepid sponge bath, as the skin was very hot and dry (this to abate fever and relieve nervousness). Being very anxious, as well uneasy about him, made the third visit, found him restless, but temperature somewhat reduced. After giving him 10 grains Dovers powder, left him sleeping very quietly. Next morning called early to see him, and found him very much nauseated. To make a long story short, found him decidedly worse, and also delirious. One strange feature was that he laid at full length in the supine position. I asked him if it pained him to lie on his sides, and he said it did not. It seemed that he naturally went that way unconsciously, could assign no reason for it. This seemed anomalous. My last visit that day was about 9 p. m. He was more delirious. I gave perorem, one and a half drachms bromide. In a little while he was sleeping quietly.

Next morning, to my surprise and delight, I found him sitting up smoking a cigarette. He expressed himself as feeling well, and further added that he had been down in the dining room and enjoyed a good breakfast with the family. While he was talking I noticed too little suspicious and suggestive bumps, one in the middle of the forehead and the other in the brow. Very naturally, I began to feel the little sentinels with my index finger. There must have been a change in my countenance, for certainly there had been in my head. His wife, who was sitting near by, said, "Doctor, oh! Dr. Macon, hasn't my husband got smallpox?" (She seemed to speak as by intuition.) I said, "He certainly has." She said, "I knew it by your look." That moment, I put him, his wife child and nurse under quarantine. I then went down stairs and quarantined the other members of the family and servants, four in number. I then put the head of the family under $5 bond "verbally," if they broke the quarantine before I returned. I immediately repaired to my home, by the back way, entered my garden, called my servant and ordered him to bring me a tub of water and an entire change of clothing out and out. I also directed him to put them in a certain place, which was about fifty yards from me and depart. This being done, I undressed, put a match to them, hat, shoes and all, then went to the bath house, which was beautifully provided for by nature, with the canopy of heaven as its top, and the freezing winds of March, bringing news of melancholy and gloom, as its curtain. After my bath (you can imagine how I felt) I could hardly pull on my shirt for the horny excrescences that protruded from my body—I strictly had the "bumps" in mind and body), I went to my dressing room, donned a suit of linen, and hastened back to the most desolate looking spot my eyes ever rested upon, I thought. I then put things under thorough quarantine, left directions, antiseptics, prepared disinfectants, and had the whole household thoroughly vaccinated. I also had two guards employed—one for dav and the other for night.

I would like to go into a more minute detail as to treatment, management, etc., but as this is such a comprehensive subject, it would consume too much time of the Convention, and possibly intrude upon the rights of others, with perhaps more interesting

and instructive papers. However, I must dwell for a short time on the efficacy of vaccination. There were eight inmates in this infected house, including the patient. None had been vaccinated in several years, and four had never been. It cannot be said that they had not been exposed, for they were with the patient frequently, and some occupied the same room all the time. The wife had been vaccinated three times, and bore as many very large scars. I considered her an immune and so assured her that she was in no danger. She realized her safety and was very useful. Being a very intelligent woman, with the assistance of her nurse, she managed things beautifully. The entire household being vaccinated, in a few days there were signs of successful vaccination in all except the nurse. She was re-vaccinated in three different places, but without avail. On the 3d of April she was taken with a chill, other symptoms accompanying. A typical case of varioloid developed. Remember, this was twenty-five days from exposure, but about fourteen days from the beginning of the dessication. This comes to the point that I would like to make and emphasize: "the period of contagion." Osler says the contagium develops in the system of the smallpox patient, and is reproduced in pustules; it exists in the secretions and excretions, and in the exhalations from the lungs and the skin. The dry scales constitute, by far, the most important element, and, as a dust-like powder, are distributed everywhere in the room during convalescence. He goes on further, to say that the disease is probably contagious from a very early stage, though it has not yet been determined whether the contagion is active before the eruption develops. This has been thoroughly settled in my mind, by close observation received from many standpoints.

Now, let's trace this case, in order to corroborate and confirm my opinion. On the 7th, the patient referred to mingled with the people of the town, possibly seeing several hundred, pulled off his overcoat and loaned it to a friend, who wore it several hours. Feeling badly, he laid in the bank where the occupants were at were at work, more than an hour. From the 8th, the day of the chill, to the 11th, the stage of high fever, was seen by twelve visitors, some remaining for more than an hour, a little nephew playing on the bed with him. This takes us to the eruptive

stage. After that no one saw him except the attendants, six in number. Among these five showed scars of successful vaccination. The only one that had not been vaccinated was the nurse, the one who contracted the disease. This shows the necessity of early vaccination and also seems to fix the stage of contagion, which, I believe, is after the stage of suppuration, or during the stage of dessicatian, the dust-like powder is inhaled into the lungs or taken in the stomach by drinking or eating, being assimilated, is taken up by the blood and thereby poisons the system and develops smallpox, shows itself in the form of pustules, where it is reproduced and comes to maturity.

And so it multiplies as if licensed by nature to do its nefarious work on as large a scale as possible. This brings us to the duty of the Health Office. To make vaccination of any immediate or material value during or pending an outbreak, it must be done early, very early, in order to make the community immune as far as vaccination can do it, which is universally conceded to be an absolute protection. Then why delay this very important necessity a moment? In order to make vaccination efficacious there must be harmony and unison among the profession and a concert of action between the Superintendent of Health, the county and town officials. With this well determined, the laity will be easy to fall in line, but, with one obstinate physician, he can spoil the whole undertaking, and nothing but force then will be of any avail, and that is very annoying and very objectionable. But, if necessary, enforce the law and do it at once, the earlier the better. A kicking, hard-headed doctor, who will not listen to reason should not be allowed to hinder, delay or possibly thwart this important duty that you owe the people, and imperil the lives of many, besides the great destruction of property, which is small in comparison to the loss of the most unworthy citizen.

With the harness on, go to work and vaccinate the entire county in a short time. This can be done in five days as well as one month.

I am thoroughly disgusted some times when I see where Dr. ——— vaccinates seventy-five in one day when it should be seven or eight hundred. Pay the vaccine staff less per capita and they will do more as a rule. Have vaccine stations and you will be

surprised to see how many will apply for vaccination. They will come from other counties. That was my experience, and I suppose human nature is alike everywhere. People like to congregate in crowds, especially if there seems to be any excitement. Record every name, get a man who knows the people in his district.

After he has vaccinated all that have applied, which will be the bulk, then he can go and take those who have not applied at their homes or places of business. This is hard work, but the condition of things demand it. In five or six days the vaccinated must be looked after, as some may have to be revaccinated. Don't be alarmed; you will have some bad looking arms. Out of the three thousand that I have vaccinated (in less than six days) there was not a single serious result and ninety-eight per cent. were successful. I am satisfied that vaccination has been neglected very much all over the State. I notice in the Bulletin of the North Carolina Board of Health that there are twenty-two counties that have more than one hundred and sixty cases of smallpox. This should not be so. There is a great fault existing in some channel, but, as it is not incumbent upon me to find where the omission of duty lies, I will leave the matter to those to whom the duty does devolve. I am sure that our worthy Secretary of the Board of Health has done his part, for he has worked diligently, untiringly and faithfully, and it is obvious that his wise writings and efforts to exterminate this great curse from the State have gone unheeded, and been little appreciated by the great majority. As to quarantine and disinfection, I will refer you to the office of the Secretary of the Board of Health, and upon application you will be sent a small pamphlet, from which you can get all necessary instructions more fully and complete than I can here describe.

As to the last part of my answer: By strict quarantine regulations. To do this effectually there must be provided a pest house or hospital for the treatment of the affected. This should be located in an isolated spot, with ample grounds for all necessary buildings, etc. It should be high and dry, preferably in the woods and near a running stream, as an abundance of water is very essential. House should be as plain as possible, so that it can be thoroughly whitewashed and disinfected, but at the same time

comfortable and well ventilated. There should be four houses of this kind, one each for the males and one each for the females of the different race. There should also be provided a house of detention, with kitchen, dressing-room, etc., all supplied with the requisite appurtenances. Patient with disease should be placed in hospital promptly. As to treatment, there is little to be done in the way of combating the disease with medicine, but should be carefully nursed by one who has become immune either by smallpox or vaccination, preferably the former. Patient should receive a mild tepid bichloride bath at least once a day, and entire body thoroughly anointed with carbolated vaseline. This is done to destroy the sporadium variolae and to render the skin soft. Also prevents crusts forming and makes dessication easy and very little pitting will follow; the dust-like powder is prevented on account of the moisture produced by the continuous inunctions. I emphasize special stress on the above treatment of the skin. Symptoms must be treated as they arise. Be sure to not discharge the patient too early, as there is danger of infecting others by the flying scales. Be certain that his clothing is rendered as thoroughly sterile as possible, and body made aseptic by baths and disinfectants. Suspects must be detained at least fourteen days from exposure, (this is, I think, the rule) and if symptoms of smallpox begin to show themselves, remove the patient to hospital. Have those who have escaped the disease disinfected before being dismissed. One nurse can take care of ten patients. Clothing, bedding, beds, etc., must be washed or aired often and treated with bichloride or formalin vaporization. The physician in charge should be a sworn officer and should be Chief of Staff. There should be a well disciplined patrol guard posted day and night. They are to be carriers of packages and supplies from places of deposit to commissary and perform general guard duty. If smallpox continue to make its invasion from other towns or other quarters, why then quarantine against those places is imperative. Have inspecting officers to examine all trains, public carriers, etc., and require them to be thoroughly fumigated. By such a method of dealing with smallpox (as I have briefly outlined) I am sure it will soon be something of the past. The health officer should be a physician, a man of an acumen mind, unselfish and honest,

with an eye ever looking to the promotion of health and general welfare and comfort of the people. Such a man will be loved and honored, his devotion to duty admired, his course approved of, his acts applauded, his name lauded, and will go down in history a hero. On the other hand, the slothful and careless one, who has allowed the disease to lurk around and become epidemic, is deservedly scorned at and held in contempt by all and will ultimately sink into an ignominous oblivion, a just rebuke.

In conclusion, I would suggest that this Convention authorize and empower the Board of Health as a delegation from this body to memoralize the Legislature and urge them to pass adequate laws in regard to compulsory vaccination, provided our present law is inadequate and impracticable as it has proven to be in the past, or the enforcement of which has been very much neglected.

DISCUSSION.

Dr. McMullan: I simply want to say a word or two in appreciation and pleasure at the very able way in which Dr. Macon treats of smallpox or variola. It has been in my mind for some time that the best way to battle against smallpox would be a compulsory law of vaccination. I am sure it would cost the county very much less to have every child in the county vaccinated before it was five years old, than it would to have to care for the cases of smallpox which have to be cared for at pest houses with guards and officers after it breaks out, and I want to especially emphasize the fact that I appreciate the way in which he proceeds. I mean the attitude that he puts himself in toward the people, for I find that every country should have a fear of variola, and if you could get the physicians terribly uneasy about smallpox, you could get the people vaccinated. If you could get the people scared of smallpox, they would consent to have their children and themselves vaccinated, but I hope the time will come when this terrible disease will be entirely removed from our country by compulsory vaccination, and that in early childhood.

Dr. Pendleton: The need for this paper seems to me was especially great two years ago. From the data that I have been able to get in the last two months, smallpox is decidedly on the decrease in North Carolina, and I believe in all other States. There is no question among us who have had experience with both smallpox and vaccination that the latter protects against the former. Two summers ago in Scotland Neck, smallpox existed for two or more months without being recognized. There were quite a large number of cases in the town of Scotland Neck and surrounding country. When

it was recognized as smallpox and called to the attention of that most efficient county health officer, Dr. I. E. Green, of Weldon, he instituted vaccination by the method as defined and advised by Dr. Macon to-day. He had men to go through the country to find the negroes who had been exposed and have them vaccinated, and if they refused, to put them in the wagon and carry them to Scotland Neck and put them in the jail. Only two refused, and they, after forty-eight hours in jail, were only too glad to be vaccinated. In this epidemic, there was a case of well defined smallpox in a house with thirteen or fourteen occupants, none of whom had been vaccinated, nor had had smallpox. In the adjoining house there were seven or eight inmates, one an old negro who had smallpox a good many years ago. All of these cases were vaccinated on both arms and in two places on each arm—two points on every arm. They all took—took very decidedly—and there were no cases of smallpox, although this was in the pustular stage.

The little experience I have had with smallpox has led me to believe that it is not so contagious until the pustular stage, unless a person sleeps in the bed and especially unless he should kiss a patient. Until the pustular stage is reached, my experience has been that it is not contracted. As regards the bad arms that result from vaccination, I have yet to see a serious one from the use of glyserinated lymph, and when the arm is properly sterilized, or as nearly so as possible and properly protected for a sufficient length of time after vaccination, and I have seen quite a large number of cases so treated. I have vaccinated in this manner some hundreds of cases, with invariably a typical vaccinia resulting, and no bad arms.

Dr. Lee: I have listened with a great deal of interest to the remarks of the gentleman on smallpox, and in the words of the old negro, "Them's my sentiments exactly," for verily I feel positive that a person who has been successfully vaccinated, cannot have pure variola, and if all of the physicians would take the interest that Dr. Macon has, the spread would be stopped. But I cannot agree with him as to the state in which it is contracted. I think it is before the stage of dessication, for this reason. I will cite one case, that of a young lady who was exposed to smallpox, and who had been vaccinated sixteen years previously. Two weeks previous, she had come from a school and was taken sick at the school house and was brought back to the house where she boarded. The gentleman who she boarded with threw his overcoat over her, where it remained the rest of that day, and the next day he put the overcoat on and wore it, going to the doctor's, six miles distant. Eighteen days from the day she developed a mild case of varioloid, eighteen days from that day he developed a very severe case of

variola, from which he died. None of the rest of the family contracted the disease at all. As soon as he contracted the disease, the rest were vaccinated, but he was the only one exposed on the first day of the fever, and I think it is contagious from the first. I would hate to risk it anyway.

Dr. Lewis: I wish to express my gratification at the reading of such an excellnet paper. It is unnecessary to say I endorse every word he says. The management of smallpox is always a difficult thing on account of public sentiment—and the main difficulty unquestionably is the want of harmony on the part of the profession. There is never any difficulty at all when the Superintendent of Health and the health officer are backed up unanimously by the profession and the health officer is the right kind of man. When he is such a man as to inspire confidence and he is supported by the general profession of the county, then the County Sanitary Committee, which is responsible for the management and which holds the purse strings and are authorized by the law to make such rules and regulations as may be necessary, then I have noticed no difficulty. I will say that I have brought the matter of compulsory vaccination before the Legislature on one or two occasions, and I have found that it was absolutely hopeless to get the Legislature to pass such a general law, but there are several ways of doing things. Our people are very independent, not to say "bull-headed," and it is difficult to get our Legislature to pass any laws interfering with the personal liberty of the citizens in any way. We are great "home rulers," and, as you are aware, the unit of our system is the county. The County Sanitary Committee is endowed with full power to make any regulations and impose such penalties as in their judgment may be necessary to protect the public health, including the ordering and enforcement of compulsory vaccination of all the people.

Now, the main thing is for the profession in this State to see to it that the members of the County Sanitary Committee, especially the members of the Board of County Commissioners, are properly instructed as to their duties. I was thinking when these gentlemen were speaking about the Superintendent of Health—how great the responsibility resting on him really is. In connection with the remarks of Dr. Pendleton in regard to the Superintendent of Health of Halifax, without making any invidious distinctions, I am free to say that Dr. Green is one of the very best health officers in the State. And he showed it the way he managed things in Halifax. There was no foolishness about him when he started in to vaccinate those people in the neighborhood of Scotland Neck. Now, when you get a man of that kind, there is no trouble in getting proper support—as is said in the poem of Sydney Lanier, "There is more in

the man than there is in the land'—so if you get the right kind of superintendent, you will have no trouble.

I would like to say while speaking of North Carolina, that while we are very humble people down here, and have very small things in the way of sanitary machinery, and especially in the way of appropriations, that we appear to have managed smallpox better than some of our Northwestern neighbors, who are very much advanced in sanitation. Smallpox in this State is nothing like as prevalent as in Michigan, which has one of the best health departments in the United States, and also in Minnesota—both of which have excellent secretaries and spend very much more money than we do.

The main trouble has been the mildness of the disease. Just as soon as people die from smallpox, the rest of the people will get uneasy and submit to vaccination, whereas, it is extremely difficult to manage it unless the disease is fatal.

Dr. Glenn: As County Superintendent of Health of Buncombe County, I would like to give a little of my experience in a recent epidemic of smallpox in Western North Carolina, where the present law was applied and met every emergency that the law could supply. We had the first case about the 20th of October, which came from Henderson county. It was the 5th of December before smallpox was suspected to be present in the commmunity. During this time, it had been treated as chickenpox by the local physicians, therefore from the 20th of October to the 5th of December, smallpox had not been under any control and hundreds of people had been exposed to its contagion. The County Board of Health was immediately notified of the existing circumstances and called a meeting and formulated rules and regulations and applied them to specified territories which equaled the demand at the time. Compulsory vaccination, after due notice had been given, was posted in public places, was instituted and isolation and quarantine of those who were already infected, and as many of those who were suspected were also quarantined. Notwithstanding the length of time that smallpox had existed in this territory from the time of the discovery of the presence of the disease in that community, not a case developed from another case, or where this case had been, after the case had been isolated and the place fumigated. This shows what can be done in any community where the law as we have it, is rigidly enforced.

To demonstrate what one case is likely to do, I had an experience of one man employed in a work train with a number of negroes, who became infected with smallpox and he was suspicioned to have it. He was not seen by a physician, and I was notified, but before I could reach the train, the crew had fled. After difficulty I found

out the name of the man who was infected and where he probably lived. I immediately swore out a warrant for his arrest on suspicion, put it in the hands of the sheriff, and he pigeon-holed it in his desk and told me that he had given it to one of his deputies to have it served and had telephoned different stations along the line to try to find where he was located, and in fact, six weeks later, he had infected the community in the neighborhood of Swannanoah and Black Mountain, where he had been going foot-loose and free, and not until the citizens began to complain of the negroes walking about the stores and stations having some queer eruptions on their bodies did I learn of this localized epidemic. I called another meeting and informed the County Board of Health of the condition, and they applied compulsory vaccination to this territory, built pest houses in the neighborhood, which was sixteen miles from Asheville, and immediately removed them from their homes, forty-two at one time, and placed them in quarantine. A thorough vaccination with extreme difficulties of this new territory was instituted, and one deputy in doing his duty, was forced into a difficulty where one man was shot.

Unless you can get the co-operation of the county authorities, including the sheriff and his deputies and the magistrates, we must necessarily—with the County Superintendent of Health carrying out the laws and the rules of the County Board of Health—it is with great difficulty that the County Superintendent of Health stops the epidemic. In one case, I was carrying on compulsory vaccination and an old colored woman refused to be vaccinated. She was in the house with several other cases, about four miles from the nearest magistrate and sixteen miles from the sheriff. I asked the deputy with me to assist me in enforcing vaccination. He said he was afraid, first, of catching smallpox, and, second, of being guilty of assault. A number of the family defied me to vaccinate her, and she played that she had fainted. I held her and vaccinated her on the forearm while the sheriff stood by and looked on, while a word from him in his official capacity would have quieted her.

Many other things can be said on the subject, but in conclusion I will say after this widespread exposure for so long a time, less than 100 cases occurred in the county since its appearance in October.

We have a good law and enough law, but not enough men holding official positions with backbone enough to carry out the law.

Dr. Lewis: I received a letter some time ago from the Secretary of the Board of Health of Nebraska, asking me if I would send him a copy of the North Carolina health laws; that he had been told by one of the surgeons of the Marine Hospital Service in regard to the health laws of the country, as they proposed to secure the amend-

ment of their law in Nebraska to get a copy of the North Carolina law, and I was gratified to learn that he thought if he could get the law of North Carolina, that he would get the best law that he knew of. I was very much pleased to find that it was appreciated by people outside our State.

We have plenty of law, but the trouble is getting it enforced.

To Dr. Glenn: I notice that you said in your remarks that you hardly had enough time to get your clothes on. I would like to ask what dress you used in this work.

Dr. Glenn: I take off my coat and vest and have a suit of overalls that are buttoned on either side of the leg, with a strap attached going underneath the foot. The overalls are fastened under the foot, and each time after coming out of a house, the overalls are dipped in bichloride solution and allowed to dry by the time I return. The dripping is done in the open air. On my head I have a kind of hood that fastens in the back, that fits underneath the coat of the overalls and a sponge saturated with bichloride fastened by a string around the head that fits over the nose and mouth. If you carry the bichloride sponge in your hand, you will have no trouble in disinfecting the hands in touching the patient. It is very crude and very effective.

Dr. Lewis: The reason I asked that question is to bring out the fact that if he protected himself, being a health officer and physician, I wanted to get him to express his methods, because I was fearful some do not protect themselves.

Dr. Glenn: The reason I don't like a gown. I used a gown as city physician in Asheville. I found it wasn't exactly satisfactory, because it didn't fit tight and your pants were exposed, and my idea was to get one to protect the pants and shoes that doesn't trail along in the dust. I think every doctor should protect himself, because as a rule he has a very susceptible individual—his driver (a negro) always with him. I find with a thin, flat, wet bichloride sponge fastened by a string around the head over the face, the moisture catches the dust and filters the air and the bichloride disinfects. Care should be taken not to touch this sponge and allow it to dry on the face.

Dr. Kent: I think I can in a very few words describe the way I protect myself. I provide myself with a suit of overalls and five yards of cheese cloth. If the weather is cold, I put the overalls on over my ordinary clothing. If the weather is not cold, I take off my coat and some of my other clothing and put on the overalls. I wrap the cheese cloth about my face and head. I can see through the cheese cloth well enough for examining a patient and can breathe through it comfortably, and yet it protects me from inhaling the scales of the smallpox. After I make the examination, I pre-

pare a bucket of bichloride solution, take off first the overalls and dip them in the bichloride solution, leaving them in it; then the same with the cheesecloth. I then wash my hands well in the bichloride solution and my face in a weaker bichloride solution. This is all there is of it. It is simple, inexpensive and easily done.

Dr. Macon: In my paper I purposely left the dress out, because I thought most everybody had learned how to protect themselves. I know in my country—in some parts of it—they protect themselves by distance. They say "distance lends enchantment."'

There is one point I would like to answer. I have forgotten the name or can't recall the name of the gentleman that spoke about the overcoat, and it being so many days before they were infected—so to speak. I think the same germs that infected that lady also infected the man. I don't think you can take smallpox before the scales appear. I don't think you have variola from a cow in the eruptive stage. I think both were infected by the same germ. I think that germ was on her clothes and got in his overcoat.

Dr. Lee, of Sampson: This man who contracted smallpox from the young lady who first got the disease, was fourteen miles from the house where this man lived. She was attending a party, had on her party clothes, and contracted this disease from another young lady before the stage of dessication. She changed her clothes before she went back to the man's house and had no occasion to use these party clothes any more before she was taken ill, and she was only exposed for one night before the eruption developed in this case, and more than that, she was not wearing at all the same clothes she was wearing there, and had no chance of getting the dry scab, and I think it proves clearly that the smallpox is contracted before the stage of dessication. I would hate to risk it.

Dr. Macon: She didn't change her hair.

Dr. Thomas: It seems to me after this very instructive discussion, that within the year we have reached the stage where we can begin to congratulate ourselves that North Carolina is losing nothing in the record that certain active health officers have made in the management of the outbreaks in their counties. However, while it is well to commend in the heartiest manner these faithful and intelligent officials, it must not lead us into neglecting precautions. There is yet a great deal of work to be done and watchfulness is still as necessary as ever. The statement made earlier in this discussion that the smallpox was disappearing, may be a little premature, and if accepted without some explanation may lead to bad results. However, the work of such men as Dr. Macon, Dr. Glenn and the other gentlemen who have spoken so well of their labors in regard to the duties of health officers is most encouraging, and I am prone to believe that in this, as in all other matters con-

nected with the best interest of the profession and the people, our State is still leading.

There is one thing I think has not been quite as much dwelt upon as it could have been. Vaccination is necessary, and it is an unpopular thing, and if the health officer in the appointment of his assistants would insist that they should be as careful as he is in the preparation of the point to be vaccinated and the subsequent protection of the arm, he would not have the hue and cry of bad arms from wage earners that have made this practical measure so unpopular. This is the great trouble, the disabling of the members of men and women who are vaccinated; and that can be largely prevented if the arm is thoroughly cleaned, and if the protection is put in the shape of a simple piece of gauze and a few straps of plaster, and especially avoiding shields. I believe more damage has been done by shields than all the so-called impure lymph.

I don't propose to offer any suggestions to this wise body of men, because they have got the right idea and are actively prosecuting it. It is a subject of congratulation that wherever in North Carolina a Superintendent of Health has actively taken hold of the situation and fearlessly carried out the regulation that he has ordained, he has reaped the reward that Dr. Macon has outlined, in a measure, at least, and he is to be congratulated for the great stride and rapid progress he has made and the good name he is bringing to North Carolina. We have much to be proud of.

Dr. Galloway: I just simply rise to ask the question that a very modest doctor in our presence doesn't seem willing to ask for himself. That is, if any of the doctors themselves during the recent epidemic, have been infected with smallpox. He just simply wants to know whether that is a fact or not.

Dr. Lewis: I have not heard of any physician being infected personally.

SHOULD THE STATE EXTEND HER PUBLIC CHARITIES?

By S. E. KOONCE, Pollocksville, N. C.

Our entire State is at this time more or less agitated over the condition and needs of our poor. Religious and chariatble societies are establishing more institutions and increasing donations to those existing. Contributions to the press constantly urge the need of reformatories for youthful criminals, hospitals for inebriates and tuberculous, and provision for idiots. Boards of public charities report imperfect accommodations for paupers in several counties. Superentendents of penal institutions and insane hospitals demand increased appropriations for the support and the protection of those who are or ought to be under their charge.

Now, while it may be as difficult for a country doctor to perform a laparotomy, unassisted, as it is for him to treat a scientific subject in such a manner as to command the attention of a body of scientific men, such as compose the North Carolina Medical Society, he occasionally has to enter his mind a thought which is interesting to himself if not to others, and which he did not collate from a few periodicals and text-books. Accordingly, there can be found in every community suffers of various natures, about whom nothing is said, and for whom nothing is done, except what is done for their temporary relief by physicians of each respective locality.

This class of patients, afflicted with disease or injury, amenable to or capable of being benefitted by treatment, not necessarily paupers, but too poor to obtain relief, are, no doubt, more frequently found in rural districts and in towns deprived of proper hospitals. Some of them are uncomplaining, live a life of pain and die unnoticed by any but a few friends; others make themselves notorious and become a nuisance to every doctor within their reach, and finally succumb to a contracted opiunm or whiskey habit.

Without depreciating a dollar expended for other worthy or worthier objects, notwithstanding deficits in annual appropriations, and in spite of the clamor of politicians for greater economy, the questions arise: What can be done for such? Is it the duty of the medical profession individually to care for them; and is the

ordinary physician able to take the time from attendance upon those upon whom his living depends to properly treat these patients free of charge? If the above be answered in the negative, is it not the duty of the State, without taking anything from the old soldier, the blind, our orphan children or the insane, to open her heart, to erect at some accessible point a State hospital well equipped and well managed, and to provide means whereby those deserving it may receive necessary treatment?

How much North Carolina is behind her sister States in such provision needs no comment. Wilmington, Raleigh, Charlotte, Asheville, Durham, and perhaps others of the larger towns possess small hospitals more or less adequate to their own needs. But of what avail are they to the great body of our people?

The average country doctor, no matter how narrow his views nor how mean and sordid his disposition, of necessity coutributes as much to charity in proportion to his means as a Duke or a Carr. Public opinion and the least spark of human sympathy compel him to attend all in immediate danger. The more chronic cases he is forced to overlook. Is it, then, a wonder, that in the woods, upon the mountains, and even in the outskirts of the towns are found women with lacerations of perineum and cervex, benign and malignant tumors of uterus or breast, men with operable hernia or carious bone, and children with deformities which might have been corrected?

The saving to the State of money annually carried to the hospitals of other States, the value to the profession as a whole, and how near self-supporting such an institution might become, is intentionally omitted; nor is there need of suggestion here about how the fund necessary to the erection of a State hospital should be raised, whether by State or private or combined State and private charity. Suffice it to say, it is a reflection upon the reputation of North Carolina that she has no such institution existing, and is a greater reflection, if in this age of manufacturing and railroad enterprise and increase in public revenues, none such can be provided.

As all efforts towards public improvements, whether successful or unsuccessful, must have a beginning, where can be found a more suitable starting for the discussion of a medical feature of

our public charities than in an assemblage of the representative men of the medical profession? Politicians, of course, having their political heads to care for, require a strong stimulus before they can be persuaded to put their hands in the public treasury even for public benefit.

It is understood that there has been organized in our capital city a faculty for the establishment of a medical college. What means their faculty have for the erection of necessary building and hospital has not been generally announced, but this much can be said: They must depend chiefly upon the young men of our own State to fill their lecture halls, and having no large city for support, upon material from the country and neighboring towns for their clinics. The medical profession will send neither to this school nor patients to their clinics unless a hospital sufficient for all demands be provided, whether by their own endeavor or by State aid.

Finally, let this query merit the attention of this body or pass unnoticed, as it deserves. If of importance, may some man or body of men in the name of God and humanity present its consideration to the next General Assembly. If a trival and useless discussion, only a few valuable moments of this Society have been wasted and the waste-basket is large enough for uneecessary papers.

DISCUSSION.

Dr. Smoot: I feel that we need better equipped and more extensive provisions in the county homes for the cars of such cases as Dr. Koonce has outlined, and I feel if the State should be called on for any large appropriation, that part of it be directed towards enlarging our insane asylums. I have had quite a good deal of experience trying to get worthy insane persons in our asylums, both at Raleigh and Morganton, and out of five applications in the last several years that I have made, I have only succeeded in getting one patient in Morganton. He was in a few months returned well, and is still well. That has been several months ago. I feel the need of larger provisions for both, and if any one more than another, it is the direction of the insane asylums.

THE MATTISON METHOD IN MORPHINISM.

By W. P. IVEY, Lenoir, N. C.

The man with morphinism is like the man with few shekels, in that he is always with us. His habitat is not bounded by zone or any imaginary or fixed line and he flourishes alike in all seasons. In the United States alone he is one hundred thousand strong. Some of us may never see a case of hemorhagic malarial fever; some of us may never see a case of smallpox or milk sickness or leprosy, but every single blessed one of us will be certain to run afoul the unfortunate opium inebriate. And he is likely to be an acquaintance of long standing and not easily shaken. This has been the experience not only of the past, but is sure to be the experience of the future *ad infinitum*. Vaccine and antitoxine have over and over again decimated the ranks of possible deadly diseases, but none of their uncles, their cousins or their aunts will ever be able to curtail the number of narcotic habitues. Kerosene oil and mosquito netting will work wonders as preventive measures, but no kindred means will ever avail to block the harbor against the invasion of the subtle fleet from Turkey. As long as there is a muscle to contract and contort, as long as there is a nerve to jump and jerk and twinge, as long as there is a hollow organ to twist and cramp and turn itself wrong side in, and just as long the papava sonniferum continues to exude the same stuff it now furnishes us, just so long will we be called upon to relieve the unfortunate victims of such a combination.

I am prompted to write this paper by these considerations, together with the fact that I opine that but few of my brethren have investigated the Mattison Method and fewer still have tried it. Hare in his Practical Therapeutics devotes a few lines to its consideration and dismisses it with the statement that it deserves a more extended notice. I have given it that more extended notice and trial and wish to give you the benefit of my experience. I had heard of the Mattison Method for a dozen years or more, but had not given it attention enough to even know what it was. Necessity finally drove me to the use of it. Some of you may get caught in the very same trap, and my advice to you

is to listen to me, for I tell you positively that I have something of advantage to say to you.

A gentleman had just discovered that his wife had been taking laudanum in large doses for a long time. He was in great distress and came to me for assistance. He was a man of means and said the habit must be broken up, if it cost all he had. His wife also expressed a desire to be rid of her incumbrance. Having assured him that we had a big job on our hands, and might or might not succeed, I began the treatment I had always used up to this time, which need not be detailed here, only to say that it included in this special case the sudden withdrawal of the laudanum. They lived six miles in the country and I heard nothing from them for two or three days, when I was called at midnight to go out to see her. I found her nervous and sleepless and vomiting everything taken into her stomach. I saw at once that my treatment was no good, and that the next thing to be done was something else, and I was not long in deciding what that something else should be. Here I was at midnight, six miles in the country, with a woman without sleep and with a non-retentive stomach. I was away from a drug store, with no refined pharmaceuticals on hand, and with no disposition to put in the night there in a fruitless effort to get her quiet. What did I do? Well, yes, I simply gave her ninety drops of laudanum. It stuck, of course, and in an hour's time she and the whole family were asleep and in a little longer time I was asleep in my own bed at home. And my woman, she was an inebriate still. The next morning I went back and began at once the Mattison Method and in three weeks time the woman was well with a minimum amount of trouble.

You will recall, gentlemen, that the Mattison Method, in short, is rapidly filling up the patient with bromide of soda and at the same time rapidly reducing the amount of the narcotic; with the downward stroke pump him full of bromide and with the upward stroke pump him dry of opium. There are two necessary preliminaries to the treatment which must be observed, else the result will be very doubtful, if not a certain failure. First, put the patient to bed, absolutely, as much to bed as if he were in third week of typhoid fever. Second, have a nurse of

firmness, honesty and decision, whose sole duty is to stay with the patient all the time. The special reasons for these two requirements will appear in the further elucidation of the subject.

In Hare's Therapeutics the Method is detailed as beginning with sixty grains of bromide of soda twice daily and increasing the dose ten grains each day for seven days. In the Twentieth Century Practice the initial dose is put down at thirty grains with the same daily increase for seven days. Dr. Mattison himself now begins with an initial dose of ten grains only and increases by ten grains each day for ten days, instead of seven, the amount of the bromide being practically the same in each case. I have not had any experience with the smaller initial dose, having used the sixty grain dose in all cases. In one of these cases, at least, I am satisfied that a smaller amount would have answered the purpose. Dr. Mattison, who, of course, has had more experience in its use than any one else, thinks the sixty grain dose unnecessary. I am inclined to think that he is speaking from the standpoint of a hospital physician, and that in general practice the larger dose, thirty grains, at least, would be necessary.

Having selected an eligible case, let us begin. At 4 p. m. and 4 a. m., give a dose of the bromide, and at 10 p. m. and 10 a. m., a dose of the accustomed narcotic. For the first few days give the opiate in gradually diminishing doses, and afterwards, when the patient is becoming brominized, diminish the dose more rapidly, so regulating it that the last dose is given not later than the tenth day. If anything else is required to relieve pain or secure sleep, give a dose of codeine or trional. Dr. Mattison regards codeine and trional as very important, though not necessary, factors of his treatment. In the cases in which I have employed the treatment I have not found it necessary to use either one of them. I might find it necessary, in my very next case, to use one or both of them, but I would hesitate a long time before using codeine. Here comes in again the difference between hospital and general practice. Codeine is all right, if necessary, in hospital practice, but in general practice, in these cases, I have a prejudice against it on account of its maternal ancestor. In any event, it is rarely called for till after the opiate is entirely with-

drawn. Tonics and digestives, especially strychnine, may be given along as necessary, and elimination looked after in the latter part of the treatment. After the first few days, the patient grows drowsy, shows no disposition to get up, sleeps most of the time and shows signs of muscular weakness. There is the bromide breath and may be some hallucinations, delusions and aphasia. The pulse usually falls to 70 or 60, but in my first case it began at 60 and gradually rose to 120, necessitating the use of digitalis.

The rationale of the bromide treatment is, that all the troubles in discontinuing the habitual use of opium, such unpleasant symptoms as yawning, sneezing, aching pains, vomiting and diarrhoea come from the reflexes, and these are abolished by large doses of bromide. Remember this, when you undertake a case—the citadel to be attacked is the reflexes, and the slogan of war must be, down with the reflexes.

What are the advantages of this treatment? It gets the patient off his drug with the least amount of suffering. Sudden withdrawal is cruel. The family also is saved any amount of sympathetic misery and often this gives the doctor as much trouble as the patient himself. Second, it is much less trouble to the physician; in fact, it is the only treatment he can use outside of a hospital without the greatest amount of worry and annoyance. It is by large odds *the* method for the general practitioner. Having had considerable experience, both in hospital and out, I have made the statement that positively I would not undertake to treat a case of opium inebriety with any hope of success, except with the patient under lock and key. I am of the same opinion still, but maintain that the Mattison Method is virtually lock and key. It is chemical or therapeutical restraint. To be successful you must so brominize your patient, that he wouldn't get up if he could and couldn't get up if he would. This is the milk in the cocoanut and requires discrimination to know when this point is reached. Some patients will require more and some less bromide, and some will require adjutants, while others will not. The method must be elastic. As Mattison himself aptly puts it, "you must mix your bromide with brains." Another advantage: A physician, who knows this treatment by experience, will use no

other. The same is true of the patient. Literature is full of descriptions of the horrors attendant upon the escape of the opiumist from his thralldom, and I cannot say that the pictures have been overdrawn. Many unfortunates of this class forbear undergoing treatment through dread of suffering. A knowledge, by experience or otherwise, of a possible escape without these horrors would largely swell the number willing to undergo treatment. I confess that this advantage might also work as a disadvantage. The knowledge of a quick and painless release from his habit would cause him to fight less valiantly against its resumption.

In my opinion the Mattison Method has no advantage over any other method in making the cure permanent. It does not make the "Keely Klaim." As in any other treatment, the patient must not be dismissed too early, but must be considered a patient for several weeks, and be looked after with tonics, restoratives and restricted environments.

Are there any disadvantages? To be sure, cases must be properly selected. There are some weak broken down cases in which it could not be used to any advantage. It is depressing to muscular tissue and could not be used where there is marked cardiac weakness. In properly selected cases there are no untoward effects either during or after treatment. One condition may or may not happen during the progress of the treatment for which you must be prepared and that is mental aberration. There is always more or less hebetude of mind, which in some cases, especially when the larger doses of bromide are used, may go on to complete acute dementia or in other cases to mania with hallucinations and delusions. This may or may not be the result of the large doses of bromide, as mental symptoms with delusions and hallucinations often occur in such cases independent of the use of bromide. In any event you must be prepared for such an occurrence or you will likely be very much frightened. Such symptoms are always transient and rapidly subside as the bromide is eliminated. There need be no fear of a permanent dementia from a ten days use of bromide, however, often that conditon might occur from the long continued use of the drug as in epilepsy. The family must be warned in advance of the possible mental symptoms, or your position will not be an easy one. In

giving this warning the occurrence should be attributed to the withdrawal of the drug and not to the administration of the cure.

After I had decided to write a paper upon this subject, I was invited by the chairman of the section on State medicine to contribute a paper to his section. As I could not furnish two papers, and, as this subject was close akin to a State subject, it was agreed that I should present it under his section and give it a sufficient medico-legal turn as to make it look not out of place. But I find my paper already too long and must dismiss the subject with only a few words upon its provinical aspect.

The cause of much of the morphinism is laid at the door of the medical man and I'm sorry to say much of it justly so. The victim will in nearly every case berate the doctor, who prescribed the drug, and lose sight of those who subsequently buy and dispense without his knowledge or consent. The doctor has to bear much of the blame that ought to attach to others, and I am here to defend him at the expense of the State. While physicians should exercise the greatest care in the use of narcotics, I think the prevention of their abuse is largely a matter for the State. Strict, uniform laws regulating the sale of narcotic drugs is the only way to restrict their illegitimate use.

As to the culpability of the medical man, a case has recently been decided in the English courts, in which a doctor was sued for malpractice, in that he was the cause of the plaintiff's opium habit. The decision was in favor of the medical man, and the main reason for the decision was that the plaintiff, being a trained nurse, ought to have been aware of her danger. This teaches us a very important lesson, both in medicine and in law and it would be well for every one of us to remember it. In every case, where it is necessary to use narcotics for any length of time, or in any case in which their use is not entirely within your control or likely to give trouble, *always* give unmistakable warning and have proof ot it.

DISCUSSION.

Dr. Anderson. I would just like to say I have not heard any paper in a long time that has entertained me—and I am sure all of us—so much.

Dr. Whittington: I want to thank Dr. Ivey for the very able paper and add my little support to his method and plan, with a few remarks as to my experience in the treatment of morphinism. This

is a question which is of interest to every physician everywhere, because, as the doctor says, we have them in the United States one hundred thousand strong, with a large inclination to increase. I have practiced this method for a number of years.

Now, in the treatment of cases in private practice, I have found it a most excellent method. I want to say, though, there are one or two points I want to emphasize that the doctor did not, because it is impossible to put everything in a paper of this kind. I think before the beginning of the treatment of these cases, it is very well for the initiatory treatment to look towards establishing the secretions and excretions, in order to get rid of the poisons in the system. For that purpose, I always use a free purgative, generally beginning with 10 or 15 grains of calomel, and continuing until the excreting organs and glands are made pretty active. Then I begin the treatment. In these cases we nearly always find that the patients are more or less abnormal in many ways. The nervous system is upset, and they are not good patients to treat for anything, therefore in the beginning of the treatment it is necessary to see that the digestive organs are in good condition.

My experience has been in a large majority of cases that a small dose of bromide is sufficient to begin with, 10 grains, increasing according to the condition of the patient. We must individualize every patient, as in the treatment of other diseases, every case is a law unto itself, and in a large majority of cases it would be better to begin with bromide of sodium 10 grains, increasing 10 grains a day until the limit is reached, which must be decided by the experience of the physician in charge. When that is done, and the patient is sufficiently quiet, it can be withdrawn without serious suffering or inconvenience to the patient.

When the treatment is properly carried out after the morphine is entirely withdrawn, which is in about two weeks, very often entirely in ten days, even when taking a dram a day, you must put your patient in good condition by proper tonic and alterative treatment. Right along that line inspire the patient with confidence in your ability and in your opinion that he is well and is going to stay well.

Never let them know when you take the morphine away, and he will think he can feel it 10 or 12 days after it is withdrawn. By following this method, we can do a great deal of good to suffering humanity and get good results in the treatment of morphinism.

Dr. Anderson: I just want to say a few words and thank Dr. Ivey for that paper and give my views as to the treatment. In applying this treatment, the great trouble with me has always been that my patients do not want to quit, and they will not put themselves in my hands for treatment. I have realized for a long while

that if they would do that and give us complete control of themselves, that we can break any of their habits. The trouble is, they will not submit, and I would like to have some information on that point. I think his treatment is all right, and that there are other treatments that are all right if we can get the patients to submit—they don't want to quit.

Dr. Whittington: I just want to say in reference to that point, that it is impossible to cure a man unless he wants to be cured; we must first have him thoroughly converted, or he must have a desire to be cured. We *must* have his co-operation.

We should put him in a condition where he really don't crave it, as the first time he has a pain or nervous symptom after he gets away from under the care of the physician, he will take a dose, and after he has taken one or two doses, in nine cases out of ten, he has a relapse.

Dr. Knight: In getting him off the morphine habit, how do you get him off the bromide habit, if he is taking 60 to 70 grains at a dose?

Dr. Ivey: I wish to thank the gentleman for the appreciation shown to my paper, and to add only a word.

As to the omission in the paper of mentioning the tonic and regime of treatment, it was not the object of the paper to treat of the general treatment of the opium habit. The object of the paper was to treat of the Madison, or peculiarities of the Madison method.

Of course the treatment suggested by Dr. Whittington is necessary, but is not peculiar to the Madison method, and belongs to the treatment of any disease.

As to Dr. Anderson's point about the lack of desire on the part of the patient to be treated, I would only say this. I give this advice: not to undertake to cure any patient of the morphine habit without his consent—unless he wants to make a failure, that is in general practice—if he is in the hospital, and you can put him under lock and key, it may be all right, but in general practice you won't succeed in the Madison method or any other if the patient does not want to quit himself, either he or the influential members of his family, who exercise control over him.

As to the doctor wanting information as to breaking off the bromide habit. A ten days' use of bromide will cause no habit or ten weeks or ten months. There is no trouble at all to stop bromide if taking 100 grains twice a day.

If by any chance any trouble should occur, the point is covered in administering codeine or trional. You may require something because he is not free from the opium habit. If anything is necessary, give codeine for pain or reflex system or trional to cause sleep, if necessary.

THE DOCTOR, THE PATIENT, THE IMPORTANCE OF GOOD ROADS TO BOTH.

By M. EUGENE STREET, Glendon, N. C.

Mr. President:

We have this year seen great interest manifested in road improvement. At the Good Roads Congress held at Raleigh in Feburary the whole State was represented, and the delegation was composed of that class of men who do something. Those men were not there for fun, but they had laid aside their business and gone to that Congress to do something for the further development of the State.

Enough had alredy been done in the State, in the way of road building to prove the great value of good roads. The amount of freight and produce that can be hauled over good roads in a given time is so much greater than what can be hauled over our average roads that thinking men have made this great effort to wake up the people to their interest. The great importance of good roads to the medical profession in North Carolina enjoins upon us the duty of doing all we can to assist this movement, both collectively and individually.

It is neither practicable nor desirable that we here discuss all the benefits to be derived from good roads, so we will take up only some that are of greatest interest to us in pursuing our calling.

Perhaps the one of greatest interest and importance to the doctor is the time to be saved. The city doctor can get around to his calls with a dispatch that is satisfactory, both to his patients and to himself. But the case with the average country doctor going over the average roads is unsatisfactory, both to his patients and to himself, for it requires too long for the patient to have to wait and the doctor has to spend too much of his time on the road. The average country doctor is a man of ability. He is also a medical student, and many are the problems he has to work out for himself. He soon has learned the lesson of self-reliance, and if he runs across something he dosen't understand he generally knows where to look for the desired knowledge, and forthwith proceeds to consult his books and inform himself, if he has the necessary books and the time for it. But he hasn't sufficient time to systematically, and satisfactorily pursue his studies.

He takes several good medical journals, but ne dosen't have time to read all of the good articles in them. He must just look over them and select to read such articles as have a practical bearing on the case he has on hand, promising himself that he will read what he knows are worth reading when he gets more time. He may get time to review his journals, but the chances are that he will not. He does not always have so many patients on hand, but he does continually have to spend most of his time on the road, and the most of the road is bad. In not a few instances about the time he reaches the most efficient period of his professional career, he suddenly and sorrowfully realizes that the unnecessary wear and tear of bad roads has so sapped his vitallity that he is hopelessly becoming an old man, physically, regardless of the number of his days; for it is a physiological law that the changes wrought by age are as unalterable as the date of one's birth. He soon finds that he cannot continue the practice of medicine with his wonted celerity and powers of physical endurance. He tires sooner and sooner, and takes longer and longer for the recuperation of his strength. Then his patrons begin to notice it, and in a little while they see that they cannot depend upon getting him in cases of emergency, in the night, nor in bad weather, and they say: We will have to do without Doctor A. after awhile anyhow, his health is failing fast, and we would as well begin to try Dr. Blank. And one by one they begin to drop away, and it is sad, indeed, to see the doctor who has borne the heat and burden of the day, and the darkness and cold of the night, and the rocks and hills and gullies, and mud and sand of the roads thus dropped by his patrons before he is old enough to be retired —and all because of bad roads. He dosen't enjoy these changed reactions, it is a mistake to think it is all because of pecuniary interest that he disapproved it; for he has always done all he could for every one who appealed to him until it has become a fixed habit and his second nature to do all he can for all men, when appealed to, or when suffering, or distress comes under his observation, regardless of its nature. In the goodness of his great big heart he is afraid that the sympathy and interest will not be felt, and that the care and skill will not be exercised in the examination and the diagnosis, and that the careful selection

of therapeutics will not be as it should; and for these reasons the patient needlessly suffers or fills an untimely grave, and he is distressed. We see all around us doctors old before their time, and it is no exaggeration to say that it is only a question of a short time before many of the vigorous men in our ranks to-day will furnish additonal illustrations of noble careers sacrificed on account of bad roads. For self-presevation we must do all we can for good roads. Sooner or later almost every one gets sick. Often very suddenly and very violently. The first thought is the doctor, and the first act is starting a message or a messenger for the doctor. The doctor starts as soon as practicable after receiving the message, and goes as fast as the condition of the road will admit; but the average condition of our roads requires twice, if not three times the length of time for him to reach his patient than would be taken up on good roads. What happens while this wearisome waste of time is going on? Ordinarily nothing much but waste of time, and much additional and unnecessary suffering for the patient. Occasionally, however, the result is more serious for the patient and the patient's family. In case of hemorrhage, eclampsia, pernicious malaria, and a number of other troubles, while the doctor is going over the road to the patient's house the patient has sometimes taken the road from the patient's house—that road back over which none ever return. Almost all of those cases are amenable to treatment provided it be properly applied in time. No man knows how soon some of these things may happen to himself or to some member of his family, and pale death arrives ahead of the doctor, while the doctor is making the best time he can over bad roads. Then while a man has the privilege to oppose and vote against good roads he has no right to so. How different the case in emergencies when the doctor arrives quickly! For illustration, take a case of prenicious malaria. The patient always dies from this malignant disease if help is not obtained in time, but always gets well if properly treated in time.

Another thing worth considering is that the great pecuniary advantages of good roads enables the doctor's patrons to pay him for his services, and this enables the doctor to render much better service.

The doctor who has to spend most of his time on bad roads has very little time to attend to his collection, and it is a well-known fact in the business world that if you neglect to look after your accounts even honest men will neglect to pay them, and the dishonest will not pay them. Under such conditions the doctor has neither the money to get the best new books and the best journals, nor time to read them if he had. So in the long run the patient is the greatest sufferer. So let us have good roads so that the doctor will have time not only to read just a little, but time to collect what he makes, and get more books and journals, and to read a great deal more, qualifying himself much better and thus give his patients much better service. Then in the long run the patients will receive the greatest benefit. But this was not intended for a long paper, nor for an enumeration of all the benefits of good roads, not even all those of most importance to the doctor and the patient. We have too many other questions of greatest importance to discuss in our limited time. Let us all go into the campaign now on for good roads, and give the movement all the support we can. Let us talk good roads and encourage all others who do so to get everybody else to do the same, to think the same, and then the people will act, and we will have good roads. The press of the State, the strong lever of progress, is doing great work for good roads. Once the people come to think about it right and see the great advantage and value of good roads, they are going to have them.

But there is one more reason to be given why we should have good roads, and it is placed last for the sake of emphasis. We have talked about self-preservation, but there is another for whose sake we should exert ourselves to the utmost for good roads, the noblest and bravest of our noble women—the doctor's wife. God bless her!

Very few physicians marry until after they begin the practice of medicine, and this good woman understands from the beginning that she is to be deprived of her husband's society, help and protection almost all of the time. She knows that she will not and cannot interfere with her husband's going forth at all hours of the day and the night for the relief of suffering humanity. She knows beforehand that for her there must necessarily be many

long, lonely hours both by day and by night, and that as her husband is to be almost always away, a very great responsibility rests with her alone in the proper management and bringing up of the family.

It is well known that a sufficient amount of rest and sleep is necessary for the preservation of health and beauty. The physician explains all this to his wife, and entreats her not to sit up and wait for him, as the time of his getting home at night is necessarily very uncertain. She agrees to all this very readily, but we all know that times without number when we come in late at night, tired, hungry and cold, and sometimes very much discouraged, there is a sweet face and a bright smile to welcome and cheer us, a good fire to warm us, and a warm supper to restore us. We cannot approve much of this, but we *do* appreciate it, and this part we cannot conceal, and for this we reason it is in vain that we remonstrate. So what can we do? Why let us have good roads, and then we can make our rounds and get home in time for supper, ordinarily. Then after supper we can sit down ann talk and read with her, and she will be happier, and we will be better men and better physicians, and the diseases of our patients will puzzle us less, and more of them will get well, and they will all get well quicker, and even the doctor's life will be worth living.

DISCUSSION.

Dr. Crowell: Nothing more can be said than what has been said. The only thing to do is to heartily endorse every word the doctor has written or spoken, and it seems to me that it ought to be published in every paper in North Carolina, so I move it be referred to the Committee on Publication.

Dr. Sykes: I don't believe in doctors going into politics, but I would like to have Dr. Street to go to the next Legislature.

Report of the Section on Practice of Medicine.

URIC ACID EXCESS.

By D. J. HILL, Chairman, Lexington, N. C.

Many diseases, not to mention a multitude of symptoms, of heretofore unknown pathology which come before the general practitioner for treatment are now recognized as some one of the manifold manifestations of uric acid excess. While I am not prepared to go to the extent that Haig does in attributing a very large proportion of chronic diseases to this one cause, it must be admitted that the condition often gives rise to many distressing symptoms, and in some cases occasions incurable organic lesions. Most writers on this subject teach that there is perhaps never an excessive formation of uric acid at a time and that its accumulation in the blood and body at any time is due to retention or failure of excretion. If we accept this as true, (and we must, after studying the extended scientific researches of the most distinguished authors,) we are forced to the belief that indigestion, especially of the intestinal variety, has a wonderful influence in checking the elimination of uric acid or else rendering pathologically active that which is otherwise latent in the system, or in some way interferring with that normal ratio of the uric acid to the urates (1 to 35, I believe, as given by Haig) which is so essential to health and happiness.

Dr. W. Gilman Thompson asserts that "the dyspepsia of lithaemia is in part a conservative process, checking digestion and absorptions whereas predigested foods are much more promptly conveyed to the overburdened liver or overloaded blood." This can apply only to those cases in which nitrogenous material is taken in excess of the individual needs; and certainly no rational physician would force nature to save his patient from one pathological condition by interposing another, when the remedy is so simple at that of withholding the protieds.

Indigestion plays a greater role as a causative factor in the production of those symptoms attributed to excess of uric acid than is generally believed. Many express the opinion that indigestion is a result of excess of uric acid. Clearly to my mind they have the "cart before fhe horse," it is a cause rather than a result of the trouble. Either may aggravate the other, but the indigestion is the primary cause. The lithaemic manifestation so often attributed to disturbance of the nervous system are primarily due to interference with normal digestion; or rather, the nervous strain, worry, or anxiety from any cause, gives rise to indigestion, and that in turn to gout or rheumatism. Do not understand me to mean that imperfect digestion of ordinary products in those not predisposed to lithaemia would give rise to such trouble, but it is the breaking down of some special nitrogenous substance that occasions the distressing symptoms. We have all noticed attacks of gout, rheumatism, migraine, hay asthma, or some one of the proteine phases of disease resulting from excess of uric acid, coming on immediately after an attack of acute indigestion, whether the result of improper diet, nervous strain, anxiety or other cause. A patron of ours has been in the habit of eating strawberries every spring, and at once suffers *indigestion*, diarrhoea, dysentery and rheumatism, coming on as certainly as the berries are eaten, and in such regular order that it cannot mean other than cause and effect.

Another man who has suffered greatly from rheumatism for the past ten years, comes occasionally to our office and asks for some of the "same medicine for rheumatism." If he comes early in the attack, before there is two much involvement of the joints, we give him a brisk purge, and follow with dermatol gr. x, three times a day after eating. No anti-rheumatic medicine at all, as you see, but the attack is aborted; he experiences prompt and perfect relief. For the past two years we have kept him supplied with dermatol, which by the way is one of the very best remedies for intestinal indigestion and fermentation, and which he takes whenever the pains in his joints remind him that he needs it, with the result that he almost never loses any time from business.

Of all the causes of lithaemia, we are taught to believe that improper diet is the most fruitful. But the laboring classes live

largely on meats and leguminous vegetables—just the diet most productive of uric acid; yet these people are singularly free from lithaemia. Why is this? They take plenty of out-door exercise, they have no nervous strain, worry or anxiety—nothing to interfere with normal digestion, and hence they are free from this train of distressing symptoms.

Perfect digestion of protied substances makes urates; imperfect digestion of the same material makes uric acid. This, in a general way. Of course excessive amount of such food in any case will almost surely sooner or later give rise to disease. In seeking the relief of lithaemic patients, diet and other hygienic measures demand our first attention. The diet should be carefully regulated, and this consists essentially in eschewing all nitrogenous or albuminous articles such as meats, eggs, etc., along with the leguminous vegetables, which are known to increas the tendency to excess of uric acid. This should be done in no half-hearted way, but they should be excluded entirely from the dietary of those whose condition is such as to admit it. Avoid tea and coffee; tea is worse than coffee.

Take starch foods and sweets sparingly. Give milk and butter, the succulent vegetables and fruit, remembering that acid fruits, strawberries, acid oranges and lemons sometimes give trouble. Give water in abundance, before meals. Keep the skin clean, and the skin and kidneys active, promote digestion, prevent fermentation in the stomach and bowels, keep the bowels active; and to accomplish this I give cascara evacuant x to xv grs. in water before meals and gr. x demators after meal when there is fermentative dyspepsia. Supplement the action of the cascara by the use of mag. sulph. every morning before breakfast when needed. Keep the urine alkaline or netural by the use of the potash salt, the acetate, citrate, or bicarbonate, which ever is most acceptable to the stomach. This is supposed to lessen tendency to heart complications, in addition to aiding in the elimination of uric acid. To alleviate the pains, and at the same time hasten the elimination of uric acid, salicylate of soda is one of the most reliable remedies. To those who bear it well, as much as 80 grs. or 100 grs. a day should be given, in divided doses, and it will be found that an opiate is rarely necessary. If, however, the

pain be excessive, morphia hypodermatically, or tr, opii diol., or liq. dov. in appropriate doses by the mouth may be given.

I have attempted only to refer in brief to some of the more interesting phases of this subject, hoping by so doing to evoke the discussion. If I have succeeded my object is accomplished.

SO-CALLLED DYSPEPSIA.

By CHARLES ADRIEN JULIAN, M. D., Thomasville, N. C.

In preparing this article, I feel that I am performing a task of failures, and an apology is required of me for attempting a subject. the elucidation of which would require a collection of stolen things that would baffle the ingenuity of the most commendable plagiarist. The title is more to "tickle the itch of the ears than to satisfy the appetite of the soul." I will confine myself to an effort to satirize the subject, depict the condition of gluttony, encourage continency, abstinency and temperance, and review what I consider the most rational treatment.

It is always essential before the delineation of any subject to have an exact idea of what it indicates, but this is confounded with so many terms that the interpretation would disturb the equilibrium of a man whose stomach was neither acid nor alkaline. There has been as much confusion and empiricism in the treatment as in the name. If I could clear away whatever mistiness may have accumulated with time about them and present to your mental vision fresh truths clothed in naturalness, if I could in any degree succeed, I would feel that I was answering a purpose that has long lain unperformed. It is a matter of general experience that disorder of the digestive organs is frequently occasioned by defects in the quality of the food. Hard and coarse foods overtask the digestive powers, irritate the mucus surface of the stomach and bowels and leads to torpor. The chemical composition of a food is not always a safe criterian for estimating its value. Its digestibility must always be taken into consideration, as the physical characters may render it liable to disorder digestion. In tracing out the causation of disease we find in not a few instances that excess is the disturbing element instead of quality.

The man who eats greedily, of course the pleasure of indulgence is the sole object, and there are people who have a

voracious desire for food, who yet are but atrophies and living skeletons, who devour not that they may digest and grow strong, but gratify and please themselves. Then comes the sin of gluttony. The same food when partaken of moderately is wholesome that becomes dangerous when used to excess. I have been tempted in some instances to supply the cud and endow them with the genuine faculty of rumination. The man who wrote that he had a wife, three children and six cows to feed, doubtless took the same view. We must have sufficient food to carry on the bodily functions and maintain life—the appropriation of good food lays up heat and energy in the time of need—and makes brawn and brain. The hygiene of the alimentary system is faulty in nine cases out of ten, and the stomach is bloated and distended by excessive eating and drinking, hence dilatation, the factor which predominates in dyspepsia. No food should be introduced into the stomach when any part of a preceding meal is there, nor should the meal be hurried or the thorough mastication be neglected, for the very finest division of food is indispensable for its digestion. Imperfectly masticated food is not only a mechanical irritant but remains unnecessarily long in the stomach and undergoes fermentation with all manner of attending disagreeable symptoms, epigastric uneasiness, fullness, pain, eructation of foul gases, etc. The ingesta that remains in the stomach is like water that stagnates in the pond or reservoir, soon becomes foul. When food remains in the stomach five hours after ingestion it is pathological, and if it remains six hours anomalous fermentation occurs, and after the seventh hour the alimentary residue will undergo exclusively acid or putrid fermentation. In this putrid condition the mucous membrane becomes corroded, nervous symptoms appear—there are manifestations of dyspnoea—cutaneous and renal disease and breaking sensations in the muscles and joints. In these fermentative or putrefactive alterations minute organisms grow and multiply, taking up from the living animal material for their sustenance, thus robbing their host of that upon which his tissue must subsist and they in turn produce various excretory substances which are extremely poisonous to the animal organism which entertains them. Stop and consider the importance of the digestive tube. Everything except oxygen

is introduced into the organism through it, and before introducing the food it must elaborate it. Poor thing, how badly some people abuse and over-tax it. Outside of the underlying relationship with diseased states of other parts of the body it is seldom that the stomach is at fault, but the man who is stuffing it. The stomach sounds the alarm, but the poor, ignorant fool who feels a little tenderness about his epigastrium, who is a victim of gastralgia, who is emaciated and weak and sucks in wind and belches it out like a graduated cribber, whose skin is livid and dry, extremities cold and disposition morbid, goes to his medical adviser and gets him to prescribe an appetizer and stuffs it still, producing in its impetuous current such an assemblage of morbid feelings that life often becomes a wearisome burden and its endurance beyond the power of reason to sustain. To observe temperance in diet and drink are the most essential correctives. Only those things which are directed to the purposes of nourishment and growth, and the support of the bodily functions should be provided. I would like to pay my respects to the subject of improperly prepared food for about one hour and a quarter. I would like to picture the ten by twelve biscuits, that have a crust above and a crust below and a pound of dough between, the ham that is served in a deep soup tureen, with a quart of a-la-grease, the seeds, the rinds and husks that give you those griping pains and are thrown off as they are swallowed. This is the picture of the ignorant, but oh, for those a-la-mode. The chafing dish party, presided over by a woman who learned her art at a cooking school, who can make you a Welch rarebit or a fricasseed omelet that will keep you company into the wee hours of the morning. Those mayonaised salads and meat croquets that will cause you to see the spirit of your great grand sire. The frozen puddings, the deviled eggs, and all the other deviled dishes that destroy the capacity of the stomach to digest and the integrity of the tongue to pronounce their names. We must attribute a great many other things in the pathogenesis, but that would lead to a very scientific paper on remote as well as direct cause.

The introduction of the stomach tube and a chemical analysis of the stomach contents are the only means of determining the different forms of this disease and a correct understanding of this

is necessary for successful treatment. The treatment of a functional ailment or a structural alteration certainly requires a cursory knowledge at least of the anatomical alteration. In ascertaining the secretory condition of the stomach the gastric contents are best examined after a test meal. I had in mind the clinical examination of cases before you, the introduction of the tube and the chemical analysis of the stomach contents, and a request for prescriptions for the cases. I found it impossible to bring the cases here. The tests I use are as follows: Total acidity. Take ten c.c. of filtered stomach contents and an equal part of neutral water, add two drops phenonphthalien and titrate with a decinorman N. A. O. H. solution until a ruby red color appears, which indicates the contents have been neutralized.

Calculation: If for ten c.c. of stomach contents it requires 5.2 c.c. of decinormal soda solution, to neutralize one hundred c.c. of stomach contents it will require as many times 5.2 c.c. of decinormal solution as ten times is contained in one hundred, or ten times 5.2 c.c. or 52 c.c. of decinormal points. In like manner I test for free Hcl., using dimethyl as an indicator.

Next test for all acids, and acid salts (except the acid combined in the process of digestion), by using alizarine as an indicator, and to find the combined acid you must subtract the amount of all the acids and acid salts from the total acidity. Fermentative or fatty acids equals the difference between the free Hcl. and all the acids except the combined period. Test for rennet by adding five drops of the stomach contents to some fresh milk and keep it temperature of body for fifteen minutes. Test for pepsin by adding cooked egg to stomach contents in warm place two hours. Pepsin is never absent if Hcl. is present.

In ordinary cases, where no chemical analysis is made, I insist upon a rigid dietary and a thorough system of purgation, but where an analysis is made I follow the following scheme:

Anacidity Treatment.—Dietetic—Bland, non-irritating, more starches than meat. Lavage—Until it will empty itself in five hours. Medicine—Large doses of Hcl. and bitter tonic.

Sub-Acidity Treatment.—Same as above, except small doses Hcl. and more meat in the diet.

Sub-Acidity with Fermentation.—Same as above, plus Resorcin, gr. v., Salol, iiss, an hour before each meal.

Low Grade Hyperacidity.—Keep bowels regular and use up Hcl. by four or five small meals in the 24 hours, composed principally of meat.

High Grade Hyperacidity.—Same as above, plus an antacid.

High Grade, plus Dilitation and Fermentation.—Same as above, plus an antacid. Resorcin, salol and strychnia and Lavage, five hours after principal meal.

Of course the treatment must be based on the history of the case as well as from a scientific investigation. Five out of every ten physicians combine pepsin with every prescription regardless of indication. There are firms who perceive the spirit of the times and present to us incongruous monstrosities in the way of quick and ready combinations. Treatment is constantly changing its character, according to the style of those ambitious minds that guide our opinions and fill our fancy. Some wizard is always scattering his enchantments, trying to seize us with every prevailing idea and subduing us to his own purpose with new combinations that arise for a moment to reflect any light and then sink again into a dark eternity.

THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.

By DR. SILVIO VON RUCK, Laryngologist and Assistant Medical Director of the Winyah Sanitarium, Asheville, N. C.

Every intelligent physician seeks primarily to determine the nature of the affection with which he has to deal in a given case before deciding upon this, that or the other therapeutic means for its amelioration or cure. He realizes also that, in many instances, the earlier the diagnosis is made the greater are the prospects of obtaining favorable results from treatment, and he further knows that, sometimes, if prompt measures are not resorted to the patient's chances for recovery may be forfeited. We are all quick to acknowledge the force of these truths in acute infectious diseases like diphtheria and tetanus, for example, as well as in various other affections, but, unfortunately, it must be admitted that not every practitioner so thoroughly appreciates the

vital importance of an early diagnosis in pulmonary tuberculosis.

It is a well established fact that pulmonary tuberculosis, in its early stages, is a very curable affection, but there does not, as yet, exist a conformity of opinion as to just what constitutes the truly early stages.

It is the purpose of this paper to consider the more incipient changes which occur in the lungs in relation to the signs and symptoms to which they give rise, and to distinguish this period of the disease from later ones, in which diagnosis is readily made, in which destructive alterations are in process or have already taken place, and in which the affection is more properly termed phthisis or consumption.

Various writers describe a "pretuberculous stage," (1) a prodromal period, so to speak, during which the prospective subject of pulmonary tuberculosis presents slight symptoms which often seem so inconsequent as to pass unnoticed or to be ignored. This term, "pretuberculous," is both a misleading and most unfortunate one, and the sooner it is dropped the better, for not only is there, in reality, no such thing as a "pretuberculous stage," inasmuch as until actual infection has occurred, tuberculosis can have no existence in the individual, but the slight manifestations which have been grouped under this head really comprise the earliest symptoms of the disease itself.

This is the golden opportunity, the time of all times, to make the diagnosis, because now the patient's prospects for recovery are most excellent; indeed, they are far better than they can ever be at any subsequent period.

But why is this opportunity not more frequently recognized and taken advantage of by the physician? In the first place, because of the apparent insignificance of the symptoms which attend the onset of the truly early stage, and which the patient is prone to neglect as of not sufficient importance to warrant professional consultation. The malaise, loss of appetite and slight decline in weight which he may experience, he readily attributes to all sorts of supposed minor ailments, for he does not know that these symptoms may mean the advent of so serious a disease as

(1) H. P. Loomis, Transactions Am. Clin. Association, Vol. 14, 1898, p. 49.

tuberculosis. For the patient's neglect of himself the profession is not responsible, but we may perhaps do something toward educating the public to the realization of the fact that such manifestations are often worthy of a more earnest consideration, and that an investigation as to their cause is always justifiable. While it is, of course, true that the cause may, in numerous individual instances, prove an innocent one, a careful investigation can, on the one hand, do no harm, whereas, on the other, neglect may lead to fatal consequences in the end. Again, it is the general practitioner, the family doctor only, and not the specialist, to whom opportunity is afforded, at all frequently, to recognize these suggestive symptoms. The knowledge that tuberculosis has existed in a family, the casual observation that certain members of a family appear less robust than others, that one child is retarded in its physical growth and development, as compared with its brothers or sisters, etc., should all serve as warnings to render him alert and wafchful to detect the very earliest indications of a tuberculous affection. In this connection it seems almost superfluous to speak of the advisability of subjecting to repeated examinations, from time to time, the relatives of phthisical subjects, whose close relations, in nursing and caring for the invalid, and in who mere domiciliary contact may render infection liable. As proof of the practical value of adopting such a method of procedure, I may add that it has been by no means an infrequent experience in the Winyah Sanitarium, to find, on examination of relatives, accompanying phthisical patients who have entered the institution for treatment, evidences of more incipient tuberculous processes and even of small cavities, the existence of which had never been suspected.

It is not in every case, however, that the failure to obtain an early diagnosis is due to the patient's neglect to seek medical advice. Too often the physician also is found wanting. He may allow himself to be influenced by the patient's own statements and agree with the latter that the slight symptoms of which he complains depend upon overwork or some unimportant ailment; again in the hurry of a busy general practice the physician frequently satisfies himself with the advice to take a vacation or with the prescription of a simple tonic and neglects to institute a

careful and thorough physical examination. Such action was perhaps excusable, in past times when the opinion was uniformly held that tuberculosis was an incurable disease, and when the diagnostic means at hand were not so thoroughly exploited as they are in these davs of modern scientific progress. But times have changed and with a more exact knowledge of the special pathology of tuberculous affections, and with the rapidly growing interest in such conditions, particularly during the last decade, we have arrived at a better understanding of all that pertains to tuberculosis. We have learned that this disease is curable if taken in time,and consequently the paramount importance of its early recognition has come to appeal more and more strongly to us as a profession.

Now what are the physical signs and subjective symptoms which we must seek to recognize if we will make an early diagnosis in the true sense of the word, that is at that period in which the first invasion of tubercles occurs in the lungs and before destructive changes are already conditioned or impending?

Among the symptoms which the patient himself may expeience may be enumerated slight elevation of temperature, loss of appetite, decline in weight, malaise and occasionally digestive disturbances. The rise of temperature during the stage of tubercle formation rarely exceeds 99 deg. to 100 deg. F. and of this the patient is usually quite unconscious, for he soon becomes accustomed to it. For this reason it is essential to depend entirely upon the thermometer and to make a careful temperature record at two hourly intervals. A temperature disturbance such as has been indicated, particularly if it is accentuated by physical exercise or occurs after meals or again, in women if it becomes more marked at the menstrual period, together with part or all of the subjective symptom which have been mentioned, is highly suggestive and should cause the physician to institute a thorough and painstaking physical examination without delay.

It may possibly be noted that cough has not been mentioned as one of the early symptoms. I have purposely omitted it thus far, because I desire to call attention to the fact that it is by no means a constant phenomenon in the incipient stage of pulmonary tuberculosis. When cough is present it is due to catarrh

of the alveoli or bronchioles or of both, but in cases in which the catarrhal changes are slight, and little or no secretion enters the bronchioles there may not be sufficient stimulus to induce it, or again, it may be produced only by deep inspirations during physical exertion, laughing, talking, etc. Consequently we must not be led by the absence of cough to indulge in a false sense of security.

Pleuritic pains and soreness in the chest, while only occasionally early symptoms, should not be overlooked. It is true that quite often inflammatory conditions of the pleura antedate demonstrable changes in the lungs by months and years. On the other hand many perrons who have suffered from pleurisy never show evidence of pulmonary tuberculosis at subsequent periods. At the same time, however, it appears to be well established that the so-called idiopathic pleurisies which are attributed to exposure, to cold, etc., have no existence in fact, no more than do inflammations of other serous membranes as those of joints and the peritoneum. Such inflammations, there is ample reason to believe, are due to microbic infection, and while a large variety of pathogenic micro-organisms may give rise to these conditions, it has been proven that very frequently their nature is tuberculous. The investigation of Schlenker showed that sixty-one out of eighty-five cases of pleurisy which he examined, were tuberculous, and various other authorities have made similar reports. With such evidence of the frequency of tuberculous involvement of the pleura all cases of the so-called idiopathic variety, as well as all others in which other etiological factors can not be demonstrated, should be looked upon as in all probability tuberculous, until the contrary is proven, while pain in the pleura should always lead the physician to make a careful physical examination.

Thus we may discover an otherwise unsuspected tuberculous process of the lung which, but for the warning afforded by the pain, might have progressed for some time without becoming recognized.

Now as to the physical signs of the invasion of tubercles in the lungs, in other words, of the incipient stage of pulmonary tuberculosis. At this time there is no percussion dullness, for the eruption of tubercles is not so dense, nor are there present suf-

ficient connective tissue changes, neither is there as yet such obstruction in the alveoli and bronchioles as to produce it. As a matter of fact during this period there is so little evidence to be obtained by percussion that it may practically be ignored as an aid in making the diagnosis.

On auscultation, nevertheless, certain delicate signs are to be detected by the trained ear of the diagnostician. There is to be heard a slightly rough, or rough vesicular inspiration, which may be of the interrupted or so-called "cog-wheel" type, independently of transmitted systolic cardiac impulses. At times an extremely delicate apical catarrh may be detected, which makes itself appreciable to the auscultator by a slight sense of moisture or "stickiness," which may attain to the degree of fine crepitation. This latter sign may often be rendered distinct by causing the patient to cough, after which it is to be heard at the end of the next deep inspiration.

The delicate auscultatory phenomena which have been recounted are those of local congestion of the alveoli and in themselves do not give us the cue as to what etiological factors are responsible. If the signs observed are due to transient conditions, such as colds, capillary bronchitis, and the like, they will gradually diminish and disappear.

But, if after repeated examination at intervals they are found to *persist over a circumscribed area* of the lung; especially an apex in an adult, there need be no hesitancy in interpreting them as corroborative evidence of the eruption of tubercles.

Furthermore, when the subjective symptoms and perhaps the personal or family history, particularly, as to possible exposure to infection, stand in accordance with persistence of the early physical signs mentioned, we should make a positive diagnosis of pulmonary tuberculosis.

Such evidence is conclusive and any additional diagnostic means, as for example the tuberculin test, are entirely superfluous.

Cases will of course present themselves in which there may still exist in the mind of even the most expert diagnostician, an element of doubt as to the true state of affairs, and in which the suspicion of tuberculosis still appears strongly fortified. In such

instances and also if the physician is not positive of his ability to detect the delicate auscultatory phenomena of the formation of new tubercles in the lung, recourse may always be had to tuberculin diagnosis. Herein we have a method which, when properly applied, is not only perfectly safe and free from undesirable effects, but is, at the same time, eminently reliable as a means of determining beyond the shadow of a doubt whether or not a tuberculous process exists in the suspected individual.

The Roentgen ray has numerous advocates as a diagnostic aid, but its natural limitations must exclude it as affording no information in the period of the first eruption of tubercles. Not until the pathologic changes have advanced to such a degree that areas of considerable consolidation are present can we expect to obtain shadows which can in any way be characteristic. Again, as regards anomaly in the comparative range of movement of the two sides of the diaphragm, which has often been observed in phthisis, since this is due to structural alterations in the affected lung, we certainly cannot afford to wait, if we hope to make an early diagnosis, until such changes have taken place. We might with just as much reason delay in our diagnosis until the advent of the tubercle bacillus in the sputum, and we know that until destructive changes are occurring with softening, liquefaction and evacuation of caseous foci, the appearance of the germ in the expectoration is a manifest impossibility. Besides, an X-ray outfit is an expensive apparatus which but comparatively few practitioners are able or willing to afford, and whose practical employment entails considerable experience to obtain anything like reliable results as a means of diagnosing even early phthisis.

The method of early diagnosis by sero-agglutination as practiced by Aeloing and Courmont, while undoubtedly of value in the hands of experts, implies the possession of facilities as well as a minuteness of technical detail which render it unacceptable to the general practitioner.

A great many other signs and symptoms have been brought forward from time to time as aids in diagnosis. In passing, may be mentioned the so-called "pre-tuberculous albuminuria" of Tes-

sier (1) of which there is as yet no sufficient evidence that it is anything more than an ordinary transient albuminuria, a widely dilated state of the pupils (2) a peculiar facial expression which has been considered as characteristic, abnormal conduction of heart sounds, (which is as a rule indicative of consolidation), a sense of vibration in the chest on speaking or vocal fremitis of which the patient is himself conscious (which if present is again an evidence of consolidation), lack of lustre of the hair, the well-known clubbing of the nails, and even the odor of the breath, as well as others too numerous to enter into consideration in a paper of limited extent.

While such phenomena are of clinical interest and more or less confirmative diagnostic value, many of them are concomitants of more advanced stages of the disease and none of them can have more than an incidental bearing upon the question of diagnosis—particularly of early diagnosis For really practical purposes we must continue to depend, for the early recognition of pulmonary tuberculosis, upon the symptoms and usual methods of physical examination in general, and the tuberculin test when in doubt; means which are surely quite sufficient when painstakingly and intelligently exploited.

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(1) Tessier cited in Am. Year Book of Medicine and Surgery, 1897. p. 35.

(2) Thos. F. Harrington, Journal of Tuberculosis, Vol. II. p. 5.

Report of the Section on Materia Medica and Therapeutics.

CREOSOTE.

J. B. WRIGHT, Chairman, Granite Falls, N. C.

I shall make no attempt to follow the custom usually pursued by my predecessors. The chairman of each section usually explore new fields, and it has been especially so in the Section of Materia Medica and Therapeutics. I shall write on the drug that I feel that I can give the most information to the busy practitioner. I think creosote is that drug, and it is a drug that is being badly neglected by the profession, and, not without a just cause, and to remedy this cause shall be one of my feeble efforts in this paper. Perhaps almost every practitioner has experimented with creosote more or less, and yet very few average practitioners use it. The cause of non-success with creosote depends upon one of two things: Either injudicious administration or the administration of an inferior article. The latter, to my mind, is the paramount cause of non-success of every doctor who uses it. Creosote, like every other drug, is manufactured by almost every manufacturing chemist, and as we ordinarily find it, it is not what we should administer to our patients. I shall as briefly as possible analyze creosote chemically. The ordinary preparations found among druggists are composed of: First, phenols, which belong to the carbolic acid type with a chemical formula of C_6, H_5, OH. Second, cresols with a chemical formula of C_7, H_8, O. Third, phlorols C_8, H_{10}. Fourth, guaiacol C_7, H_8, O_2, and fifth, cresol C_8, H_{10}, O_2.

At first glance one will note that the second and fourth, or cresol and guaiacol have a very similar formula, yet the first is objectionable because toxic and the latter is non-toxic and of great therapeutic value, and again the third and fifth, or phlorol and cresol, are alike in their chemical construction, yet phlorol is toxic and cresol is non-toxic. Out of the five constituents of

commercial creosote, we only want two, the other three being very objectionable.

Repeating.—First, the phenols are a group of organic compounds, of which carbolic acid is the type, and are very poisonous. Second, cresol is of the phenol type and consists of three varieties, viz., para-cresol, meta-cresol, and ortho-cresol, which are isomeric, that is, composed of the same elements in the same proportion, but are chemically and physiologically different. Third, phlorols are oily compounds and are very irritating and without any therapeutic value. Fourth, guaiacols are oily liquids of decided therapeutic value and are very often substituted in the place of creosote. Fifth, cresols are colorless, oily liquids of an agreeable odor and burning taste, and of very great therapeutic value. Pure beech-wood creosote should be composed of guaiacol, sixty per cent., and cresol, forty per cent. These other impurities should be eliminated. Now the question arises, how are we to know that we have a pure article, and who can we rely upon? I shall try to explain. Rely upon no one as to the purity of creosote, but test every sample yourself before prescribing it. I shall give two or three very simple tests that any doctor can apply and that every doctor should apply before giving a sample of creosote. The pure creosote is distinguished from the impure, or that containing phenols and carbolic acid, by the following tests: First, pure creosote forms a transparent fluid with collodiom, whereas impure creosote and carbolic acid gives with about two-thirds of their volume of collodiom a gellatinous mass. Second, pure creosote is nearly insoluble in glycerine, and carbolic acid is soluble in all proportions in glycerine. Third, alcohol and ferric chloride added to pure creosote produce a green solution, which is turned brown by adding water, whereas alcohol and ferric-chloride added to carbolic acid makes a brown solution, which is turned blue by the addition of water. These three tests are very simple and can be carried out by any doctor. From the above analysis of creosote any doctor can readily see the great importance of being very careful and prudent in selecting a pure preparation of creosote. We cannot be too cautious about the preparation we prescribe, and if we wish success we must be positive that our patients are getting the pure article or we will certainly

fail in our anticipated results, and of course come to the conclusion that creosote is not of the therapeutic value some few would try to make us believe it to be. I feel that I cannot put too much stress on the great necessity of seeking out the purest samples and administering only the preparation free from impurities. I find in my very limited experience that the white label creosote manufactured by T. Morson & Son can be given in larger doses and with better results than any preparation I ever used. They claim it is made by a double distillation of tar from pine wood instead of beach wood tar. Yet, on account of the constant inquiry for beech wood creosote, they do supply both kinds, but they are entirely different and should not be confounded. The white label creosote contains less of the objectionable substances found in many samples of creosote. Such as phenols, cresols and phlorols. This fact accounts for patients being able to take larger doses with safety.

Dose—The dose is very important as no one rule can be laid down that will suit all cases. The dose should be given to suit the particular patient, and it depends upon what the drug is being given for. Of course, the dose should not be the same in every case, hence, here hinges the success of one doctor and the downfall of another. I want to put great emphasis upon the important fact that a large dose is not always the best, and the necessity of a close vigil and regulating the dose to suit each patient's constitution. The dose of creosote depends upon what it is given for: Example, one or two minims is sufficient to allay vomiting, three to five drops is sufficient in cases of diarrhœa and intestinal disordres, or for an intestinal antiseptic, and ten to fifteen minims is usually large enough dose in pneumonia and bronchitis, but we usually have to give thirty to one hundred drops in case of phthisis pulmonalis. I never gave over eighty drops of beech wood creosote, but have given Morson's in hundred-drop doses three times a day with very gratifying results.

Mode of Adminisration—Creosote may be administered internally, subcutaneously, externally, by inhalations, and it has been thrown down into the lungs combined with a hydrocarbon oil. Of these several modes of administration giving it internally has proven in my experience to be the best. When a pure article is

used there are no objections to giving it "per orem." I am skeptical about the statements I have seen as to creosote's use subcutaneously. A few doses may be given in that way, but it could not be long continued. It produces a swollen, reddened, tender area from half to an inch in size around the point of injection, which lasts for two or three days. This terminates in an induration of longer duration. This renders impracticable the continued use of it in this way, and its continued use is necessary in most cases, but there is nothing of special advantage to be gained by its hypodermic use, for when taken internally it is readly absorbed into the system unchanged and goes to the blood as pure creosote. I have never practiced throwing creosote directly into the lungs and cannot see any advantage to be gained by it, in fact it could not be administered in this way so as to reach and penetrate a tubercle in the alveoli. If it does not reach and penetrate tubercles of the alveoli, it is immediately thrown off by the cilli of the bronchi, and could only be of advantage in a local way in tubercular bronchitis and tubercular laryngitis. There are so many other better local antiseptics that are not so disagreeable. If it is to be given to destroy pus cocci in the bronchi, it would be better to give some less disagreeable and better local antiseptic. I do not claim any decided therapeutic proprieties for pure creosote by local application. It has a very great preserving power, and it is claimed to have, to some extent, a local anaesthetic action. I do not believe pure creosote has any anæsthetic proprieties. It is the impure article that has this effect, and it is due to the carbolic acid it contains. Creosote is an excellent antiseptic, and is absorbed into the blood unchanged so we have the blood carrying to every part of the body an antiseptic and preserving fluid. This creosote-charged blood goes to every organ of the body, destroying germs or rendering the soil less fertile for them as it goes. Creosote is eliminated principally by the lungs, kidneys and skin. It is largely excreted by the lungs, hence its special value as a pulmonary antiseptic. All the impure blood goes to the lungs to be purified before being circulated over the body. The lungs are therefore more thoroughly saturated with the creosote than any other one viscus of the body. The pulmonic cir-

culation is small compared with the systemic circulation, and as the blood of the body is forced through it, the lungs are thoroughly bathed with this creosote-charged blood to a greater degree than any other viscus of the body. Really, the entire lung tissue is thoroughly permeated with the drug, both through the circulation and by excretion, hence the fallacy of giving it by throwing it down into the lungs or by subcutaneous injections, for it reaches every minute portion of the lung when given internally. I believe in giving creosote until my patient is saturated with the drug. In tuberculosis pulmonalis to reap permanent results it must be continued a long time after every symptom of the disease has disappeared. I would suggest that it be kept up at least twelve months after the patient is apparently cured. It will not impair digestion, but aid it if a pure sample be administered. I have been using creosote regularly for three years, and since I begun to test each sample and to use only the preparations that prove to be pure, I have not had a single case to fail to take any amount I gave, without any complaint, such as burning the stomach or causing indigestion. On the contrary, it invariably aids digestion, increases the flow of the gastric juice, prevents fermentation and increases the apetite. I usually give it in capsules along with terraline or compound syrup of hyphophosphites. Sometimes I give it alone, having patient to take it about the middle of each meal, so it does not enter the stomach while empty and the meals serve as a vehicle to dilute it. I usually begin with fifteen or twenty drops and increase one drop a day until forty or fifty drops three times a day is reached. I let them take that amount for a few weeks, then if they do not seem to be still saturated I have them to increase at the rate of three or more drops per day until sixty or seventy drops three times a day is reached. I rarely ever have a patient that demands over fifty drops three times a day. There are some few cases that demand more, but a great many are given more when it is not actually necessary. Large doses of creosote are sometimes a necessity, but I do not think we should give a hundred drops in every case of tuberculosis that comes under our care simply because some other doctor has given that amount and had success. As stated above, it is actually a necessity in some cases but I believe them to be rare.

Uses.—The uses of creosote are legion, and yet it is not used as frequently and as varied as it should be. It can be given to advantage, in small doses, in the following diseases: Vomiting, diarrhoea, and especially spring diarrhoeas, caused from fermentation, cholera, seasickness, etc. It is used as a gargle in salivation, and in ointments for ringworm and various cutaneous affections, and in malignant and indolent ulcers, but its greatest service is in pulmonary diseases. It might also be called a specific in pulmonary tuberculosis in its early stages. I have used it with decided advantage and very gratifying results in pneumonia. It certainly is of service in acute pneumonia. I have used it in five cases during the past winter. I gave them twelve drops in a capsule every four or five hours day and night. I found it would relieve the cough, when present, render breathing less labored, slightly lower the temperature and lessen the virulence of the pneumococci, and thus decrease the auto-intoxication, hence there was less depression, causing less demand for stimulation, and in this way decrease the danger of death. One case I think worth mentioning, as I gave him nothing but creosote and tincture of aconite: Negro, aged 30 years, occupation, stone layer, fell in water on Saturday. I was called to see him the following Tuesday night; found him with a temperature of 103 F., rapid bounding pulse, respiration accelerated, and complaining of a catch in his side. He had a hacking cough, with some bloody expectoration. I gave him seven grains of calomel and soda and five grains of acetanelid and salol; saw him next morning, bowels had acted freely, but he was no better, and had not rested all night. I gave him twelve drops of creosote and three of tincture of aconite every four hours. Saw him next day, much improved. I kept him on same treatment for three days, when I left off the aconite. He improved steadily from the beginning, his expectoration cleared up, cough steadily improved, pulse was better, and temperature gradually went off. He sat up on the seventh day. He had a rapid and uneventful recovery. My limited experience with creosote in pneumonia has been very gratifying.

DISCUSSION.

Dr. Duffy: I would like to ask the doctor if he ever noticed any bad effects of the creosote upon the kidneys.

I notice sometimes the urine will become dark as in an ordinary case of hemorrhagic fever (or malaria hematuria). I know in a case that my brother had he noticed something unusual. We made an examination and found the urine charged with albumen.

I wonder if it had any influence in causing it. I have not been able to give large doses without causing coloring of the urine. Some years ago, creosote was found to be of value in lung diseases. I began with the hope that we had found something at last that was going to cure it, but I have never seen anything to justify me in making the statement. I suppose I have not struck the right kind yet.

It would be very interesting to me to hear the experience of the gentlemen in the house as to the effect of creosote in the coloration of the urine. I am surprised the doctor has not seen it, as it appears constantly with me.

Dr. Wright: I would like to say that it has that characteristic effect, but I have never seen any untoward effect. I would like to ask him if he ever used Marsden's creosote. I tried to lay great emphasis on the fact that Marsden's extract from pine tar, not beach tar, was the preparation to be used. Sometimes I found some patients that seemed to tire of it—you cannot give any one thing for a long time that they won't tire of. I don't know whether it is really in the patient or the mind, so I changed to a preparation made by Merck. I gave that for a short time, but you cannot give it in as large doses as Marsden's. I have never had any trouble with the urinal passages. I have had patients to come to me and complain that it was having an untoward effect on them, but if you conceal it from them, I found it was invariably in the mind and not in the stomach. I had a patient a day or two ago who told me it made him so restless he couldn't sleep at nights; that it was tearing his nervous system up so—I had only been giving 10 drops—so I increased the dose immediately to 40 drops and so he improved nicely, and said he supposed it must have been his mind instead of the creosote. I often give it for dizziness. I want to give it to the point of saturation, especially in pulmonary trouble; give it freely in capsules after meals. By the way, I tested it myself. I am a living example. I took 40 drops on an empty stomach. I thought I would see if it would turn my stomach. I took 40 drops in capsules with about an ounce of water, and I never have felt any ill effects. It made me a little dizzy, as I was not used to taking it, but as to turning my stomach or anything of that kind, it had no untoward effects. It is slightly diuretic.

I had a patient come to me from New Jersey who had been taking creosote and I gave it to him in capsules. He made such a complaint I changed it and gave it with hypophosphites. When I read Dr. Burrough's pamphlet, I commenced giving 40 or 50 drops and have had no bad results from large doses of Marsden's creosote. That is the kind to give. You will have bad results from the ordinary kind on the market.

Dr. A. A. Kent: I wish to give emphasis to some parts of the instructions that Dr. Wright has given us in his paper on creosote. I think it is certainly one of the coming remedies. I regard it as almost a specific for tuberculosis, and it is regarded by the profession as a body as being the nearest approach to a specific that we have yet found. This makes it a drug of especial interest to us all. The explanation of why some of us can only give very small doses of creosote while others can, and do give enormously large doses, is due to the fact that creosote, as we commonly speak of it, creosote as we commonly use it, is a compound drug, made up of component parts, some of which are desirable, some of which are not desirable. Dr. Wright has named and explained for us the component parts of creosote and told us which are irritants and which are not. I cannot repeat it as he has explained it. But I can see how castor oil can be treated and the disagreeable taste removed, and yet when given it acts as a purgative. In the same way creosote may be broken up and the irritating, toxic part removed and the non-irritating part retained and used. I can see how the bitter taste of cascara can be removed and the purgative properties left in it; and if so, creosote may be broken into its component parts, and we may take from it the one element that is not toxic, and it may be given in much larger doses. I think it is unfortunate that Marsden did not call his White Label Creosote, "Creosol." If it had been called "creosol" instead of creosote, much confusion would have been avoided. We would all be using creosol instead of creosote; we would be giving it in much larger doses than we are giving and doing greater good to our patients than we have been doing.

Marsden's White Label Creosote is largely "creosol," made from *pine tar* and not from *beech wood*, as is commonly thought. I once ordered "Marsden's Beech-wood Creosote," and got what I ordered, but it was not what I wanted. Marsden does make a beech wood creosote for commercial purposes, to supply the large demand for a cheap creocote; but it is entirely different from his "White Label Creosote." Be sure that you get the "White Label Creosote." It is made from pine tar shipped from the city of Wilmington, and should be made in Wilmington instead of some town in the island of Great Britain.

Dr. Duffy: Why your experience is so much at variance with

mine, I cannot understand. I always used Marsden's White Label Creosote, and I have not been able to get the same results.

Dr. Wright: It certainly has been gratifying to me, as I have had five hemorrhages. I took creosote in 100 drop doses three times a day, and I am a living example of Marsden's Creosote, and I don't feel that I can say too much for it.

Dr. Roberson: Dr. Duffy mentioned malaria hematuria. I want to ask the doctor if he has ever had that. In the last two years I have had malaria hematuria, and in looking over the authorities for it I cannot find any one treatment for it. In the eastern portion of the State we have a good deal of it, and use alkaline treatment. I have had four cases and saved one out of the four, but they were in houses situated in such a way you couldn't get treatment, you couldn't apply the steam bath. The one I saved was by placing hot bricks around. He said I burned him, but I thought if he went off, he would have burned worse than that. I would like to ask if you have any treatment for it.

Dr. Smoot: I simply wish to ask if there is any difference in the action of creosote in the malarial districts than in the mountain regions.

Dr. Wright: I am not in a position to know. I have never had a case of malaria to treat in my life. I live in the western part of the State, and must say I don't know anything about its treatment.

Dr. Highsmith: I am from the eastern part of the State. I have not had Dr. Wright's experience with creosote. I have had a good deal of trouble with it, especially a man that went all to pieces—his nervous system—and he couldn't stand it at all. I thought possibly it might not be the right kind of creasote. I think I will have my brother order some of Dr. Wright's Creosote, and see if the trouble is in the kind of creosote. Have used beach-wood creosote, but did not call for any particular kind.

THE SPIRIT OF COMMERCIALISM IN MODERN MATERIA MEDICA AND THERAPEUTICS.

By B. R. GRAHAM, M. D., Wallace, N. C.

The spirit of commercialism which is fast pervading our materia-medica and therapeutics of to-day is one of the growing evils of our profession and threatens to rob us of that profound and almost sacred respect in which our profession was once regarded, and demands our urgent consideration.

It does not take the eye of Newton, nor the brain of Bacon to discern a vast difference in the faith and confidence accorded the profession of to-day, and that enjoyed by our predecessors of twenty years ago.

What is the cause of this apparent lack of appreciation of the skill of the profession of to-day, with all our boasted advancement in science? We all know that the modern physician is far better equipped and more able to make a correct diagnosis, has more accurate conception of the etiology, pathology and treatment of disease than his predecessors, but in spite of these superior endowments he fails to command the same respect and enjoy the same reverence from the laity.

A superior intelligence on the part of the public may account to some extent for this change, but by no means is entirely responsible. In my opinion we may look within our own ranks for the cause, and that is the spirit of commercialism, which we are allowing to deluge our materia medica, with countless hordes of semi-proprietory preparations, forced upon the market for private gain by enterprising manufacturers, who are dominated by commercial motives and have no interest in the profession, save as a means of promoting their selfish and mercenary interests through our recognition and endorsement of their highly vaunted nostrums. I claim that it is unjust to our intelligence, a travesty upon the principles of scientific therapeutics and the vilest empricism for us to foster this iniquitous traffic by endorsing and prescribing remedies of whose therapeutic value we know little, and of whose chemical composition we know nothing. It adds no dignity to our profession, and their indiscriminate use should soon bring us into deserving disrepute with all legitimate practitioners.

The self-respecting physician, who has devoted four years and much money to the acquirement of an education for the one special purpose of treating disease in an intelligent and scientific manner, has the right to know and demand the true and exact composition of the things he is begged to prescribe. When we are asked to prescribe an article whose formula is purposely withheld, it should be regarded as a direct slur at our educational training and professional ability. This is the opinion of a growing number of reputable physicians who are withholding their support and discountenancing such unscientific methods. May the time be nigh when no one will have the teremity to solicit the support of the medical profession, unless he can do so recognizing our right to know and demand the correct formula of his product. He can have the process of manufacture protected by a patent, but let us demand a full revelation of its formula, whether a mechanical mixture or a chemical compound.

Our medical journals are aflame with their advertisements offering the "medical profession only" their much lauded remedies, for almost every malady to which flesh is heir. Tell me if the physician who prescribes this class of remedies is not as guilty of empiricism as the quack who parades the marvelous virtues of his great discovery through the press, and succeeds in fleecing the credulous public? Of the two, the quack is the more clever, for he gets the profit on his sale, while the physician only receives an additional supply of advertising matter, with testimonials from physicians galore, who are meeting with unprecedented success in the use of the remedy.

Far be it from my purpose to attack the legitimate efforts of any worthy manufacturer to introduce to the profession a remedy which, after exhaustive laboratory experiments, promises to give uniform and favorable results. We should foster and encourage manufacturing chemists along this line in every possible manner, for this is our true source of progress and advancement. To such pioneers, who are making original research and investigation in this field, are we indebted for our most valuable modern acquisition in materia-medica and we should give them our

heartiest co-operation in the way of clinical tests and reports upon new preparations.

I believe that we are bound by the most sacred obligations to use our best judgment and endeavors for the good of every one who comes under our professional care, and in so doing we should not adopt a narrow and exclusive system, and prejudice our minds against ascertained truths, from whatever source derived, for by so doing we would fetter our judgment, abridge our usefulness and make ourselves unfit for fellowship in liberal medicine. But to countenance the many proprietary preparations offered through the advertising columns of our journals is contrary to our professional and financial interests, and the interests of scientific medicine.

No department of our profession today offers greater opportunity to the young physician of ability and industry than does the field of internal medicine. While the brilliant results of modern surgery dazzles the public and offers greater emoluments and a more enviable reputation, because the work is such that its results are seen and more fully appreciated. Still I daresay no department of our science demands closer study, a more analytic mind or a more careful discrimination than the department of internal medicine.

"The evolution of pathology as developed by the microscope, our ever increasing knowledge as to the cause of disease as demonstrated by bacteriology and our truer insight into the physiological action of drugs and their potency for relief by a rational and intelligent administration, should stimulate us to more earnest work in the direction of scientific therapeutics, and induce us to turn our backs on pretence, ignorance and empiricism as represented by a servitude to the omnipresent proprietory preparations of the day," products of brains, ignorant of physiology and rational therapeutics and actuated solely by a spirit of commercialism.

SOME OF THE RECENT REMEDIAL MEASURES.

By W. W. McKENZIE, M. D., Salisbury, N. C.

During the past few years the general advance in therapeutics has been more marked than in previous years, and a very considerable number of new remedies or new remedial measures other than drugs have been introduced, and after due trial have been found worthy of professional confidence. It is needless to say that many others have been brought before the profession and, after careful trial, have been relegated to the list of failures, or continue to be used by a limited number of practitioners who have not yet determined their exact status.

One of the newer therapeutic measures which offers considerable advantage in the treatment of grave and pressing complications is the hypodermic injection of sterilized salt solution containing gelatin, for the purpose of arresting hemorrhages which cannot be arrested by means of direct application or compression. This method, which is supposed to act very materially increasing the coagulability of the blood, has been employed to so large an extent in France, that it is there recognized as being a wise procedure, and in our own experience with it in this country it has given results which justify a continuance of its employment. It is hardly necessary to point out that these injections must be given under the strictest antiseptic precautions, both in regard to the preparation of the skin of the patient, the solution itself, and the needle and syringe with which it is administered.

These injections have apparently given good results in forming the clots in the aneurismal sacs, in arresting pulmonary hemorrhages, and in controlling others more constant but less active loss of blood.

The injection commonly employed consists of eighteen grains of ordinary gelatin and eighteen grains of sodium chloride in two ounces of distilled water, which should be administered with an antitoxin syringe, divided into two doses of an ounce each. When aneurism is to be treated by this method, an injection every day, or every other day, is sufficient. "In more pressing cases where the gelatin is to be used but for a short time, two injections may be given in the same twenty-four hours." (Hare.)

UROTROPIN.

Which is a compound containing formaldehyde, which, on being absorbed, is decomposed so that the formaldehyde is set free in the urine, exercising its powerful antiseptic influence. As a result it has proven itself of very great value in the treatment of cystitis, associated with phosphatic and alkaline urine, not only exercising a useful, permanent influence, but often giving relief after a very few doses have been taken. It has also been found by Richardson to be a valuable drug for the purpose of preventing the spread of infection by typhoid fever germs, since it so disinfects the urine of typhoid patients that the bacillus of Eberth is destroyed. I have also found it of great value in the last stages of gonorrhea. The usual dose is from eight to ten grains, dissolved in half tumblerful of water and taken three times a day.

TAKA-DIASTASE.

Another remedy which is surely obtaining a very definite therapeutic rank is taka-diastase, the ferment obtained by the process of Takamine, of Japan, and which is used for the treatment of those very common forms of dyspepsia occurring from faulty digestion of the starches.

This substance given in capsules alone or combined with nux vomica or arsenic will certainly almost always give immense amount of relief.

I have found it of great value in the vomiting of pregnancy if given in five grain doses in capsules before eating. It surely will prevent, to a notable degree, the nausea and vomiting which is so annoying to the pregnant patient.

HEROIN.

This is a new morphine derivative. This preparation has been introduced into medicine for the purpose of allaying cough, and is substituted for codeine. Its action in relieving cough and dyspnoea is prompt, and its ready solubility renders it peculiarly suited for hypodermic administration, especially where immediate results are required. In therapeutic doses there is no disturbance of the gastric functions. Its action on the intestines seem to be a slightly constipating one. The drug is well borne in both the young and the old. As an anodyne in painful affections it ranks

much below either morphine or codeine. The dose is from 1-10 to 1-8 of a grain. The incompatibilities to its use internally are alkaline and apomorphine. The results which heroin has achieved promises for it a permanent place in therapeutics.

HOLOCAINE.

This remedy finds its chief usefuness in ophthalmologic surgery as a local anesthetic.

Special journals, devoted to the eye, have recently contained many articles in which reports have been made as to the exact sphere of usefulness of this new synthetic substance. They claim that it promises certain advantages over cocaine in that it does not cause mydriasis, and therefore, does not tend to increase tension. It does not effect accommodation. It produces a greater degree of anaesthesia of the iris than does cocaine. It relieves severe and painful inflammation which resists cocaine, and unless swallowed or injected subcutaneously, does not produce poisoning. It is strongly antiseptic in its action, has no roughening influences on cornea. On the other hand it does not tend to control hemorrhage as does cocaine, since it does not cause primary contraction of the blood vessels. It may be employed one-half to one per cent. solution.

ACETOZONE.

(Benzyl-Acetyl Hyperozide.)

Since we recognize that the cause of typhoid fever is a germ (the bacillus of Eberth) and that the symptoms are due to the absorption of the toxic product of that organism, we are better able to treat the disease more scientifically, hence, the first step is to eliminate the toxine from the system and destroy them. So we first simply move the bowels by grain doses of calomel and soda every hour until four to six grains have been taken, and then give some antiseptic. Acetozone is highly recommended by good authorities in the treatment of typhoid fever. Dr. Eugene Wasdin, Surgeon U. S. Hospital Service, Buffalo, N. Y., reports twenty-seven cases of typhoid fever treated by him in which he used acetezone, and all cases recovered. He advances the theory "That the primary germ colony of this disease cannot be considered as taking place in the intestinal canal, but that the weight

of evidence shows it to be normally an invasion of the respiratory tract; that the bacillus of Eberth invades the general circulation from this primary colony (typhoid sepsis) in practically all diagnosed cases; that from the blood current it may give rise to all the well known terminal expressions, such as the infection of the intestinal tract, the gall-bladder, the urinary bladder, the serous membrane, bone marrow, etc." His treatment of these cases consist in administering grain doses of calomel combined with one grain of aloin and two grains of guaiacol carbonate every four hours until intestinal canal was well flushed; also patient was given from 1,500 to 2,000 cubic centimeters of the twenty-four hour old solution of acetozone daily; the diet was milk diluted with the acetozone solution. In addition to the acetozone then administered by the mouth, the effort was made to reach the colonial area in the lung by means of forced inspiration of the atomized solution, but owing to the paresis of this area and the well known difficulty of atomizing deeper structure it is not known that the aplications were of great benefit. In some cases the acetozone was given in capsules, five grains, in sugar of milk three times daily. To meet high temperature cold sponge baths and at times the full tub. He notes that the first influence of this drug is the increased secretion of the kidneys; second influence is the very pronounced decrease of the odor of the typhoid stools which soon becomes odorless, and at the same time the flora of the intestines quickly becomes diminished, plate culture of given quantities of the dijesta showing comparatively few germs to the normal. The intestinal complications are most frequently the source of the greatest danger in typhoid fever, and are the cause of the major part of the mortality of the disease, and of many of the prolonged cases, therefore, if we have in this remedy an agent capable of at least partially sterilizing the intestinal canal, thus reducing the possibility of gaseous fermentations with bowel distentions and its concomitants, hemorrhage and perforations, a great advance in treatment has been gained. But we accomplish at the same time the destruction of the secondary infection of the canal by the typhoid organism, thereby averting further toxæmia by absorption from the canal. Mixed infection is made materially less probable. The germicide is, therefore, to be directed

against both the primary colony in the respiratory tract and the secondary expression in the alimentary canal, and he has used the solution hypodermically with benefit."

DIPHTHERIA ANTITOXINE.

It is hardly necessary at this day and time to insist on the unquestionable value of diphtheria antitoxine, the efficacy whereof has been confirmed by statistics from all parts of the world. I think that we are satisfied that this antitoxine is a specific, but the question is asked, "if it is a specific, why does it not cure all cases?" The reason, I think, is (1), it is not used early enough, the streptococci having been given time to develop and produce their violent effects. Hilbert found that when a mixed culture of diphtheria bacilli and streptococci is inoculated into animals afterwards treated with antitoxine, the latter recovers from the diphtheria, but succumbs to the streptococcus infection, but when the antitoxine is used early, the streptococcus is averted. (2) It is not used energetically enough, too small quantities or at too rare intervals being administered. (3) There is a proportion of patients who are so susceptible to the disease that antitoxine cannot cure them, just as there are patients suffering from malaria who cannot be cured by quinine, or syphilitics who are not cured by mercurials and iodides. The dose varies with the severity of the case and the time administered. The earlier the remedy is used the more favorable are the results obtained. In mild cases where the serum is administered within 24 hours of the onset of the disease, the initial dose should be not less than 1500 units and should be repeated every eight hours until most marked and decided improvement results. But in severe cases where the serum is administered in 36 hours of the onset of the disease, 2,500 to 3,000 units should be used and repeated every seven or eight hours. In the extreme cases, especially in croup and where the treatment is not begun until after 36 hours, the dose should be from 3,000 to 5,000 units. In these cases, as in others, the injection should be repeated every eight hours until recovery is assured. Dose for immunization is 500 to 1,000 units.

My experience has been limited to fifteen cases, three of which were true diphtheria and the remaining twelve diphthe-

retic laryngitis (membraneous croup); of these the three true cases recovered, and three of the laryngeal type died; two of the latter tracheotomy was performed and one intubated. Of the nine recoveries only two required intubation; antitoxine was sufficient in the other seven. In all of these cases the antitoxine made by Parke, Davis & Co. was used, which is always reliable, I think.

SILVER VITELLIN, IRON VITELLIN, TANNIN VITELLIN.

During the past eight years Drs. Albert C. Barnes and Herman Hille, of Philadelphia, Pa., have been engaged constantly in original research work in chemistry and experimental therapeutics, in America and at the University of Wurzburg, Berlin and Heidelberg. Most of their work has been of a purely scientific character, but, nevertheless, interesting to the modern physician. They call the attention of the medical profession to four new synthetic compounds, produced for the first time by themselves, which, after extensive clynical tests in the United States and Europe, have proven to be of more than ordinary practical value in the treatment of disease.

They claim for their silver vitellin, a substitute for silver nitrate. It contains 30 per cent. of silver, twice the quantity of any silver proteid heretofore produced. The significance of this fact is apparent, since the therapeutic value of a silver compound depends upon its silver contents. They say "that silver vitellin does not precipitate albumen or sodium chloride, hence it differs from silver nitrate in that it has no coagulating effect upon mucous membrane and is not chemically changed by their secretion." A further advantage of silver vitellin over silver nitrate is that the action of the latter is confined to the surface of mucous membrane, whereas silver vitellin has an intensely penetrating action (without causticity or irritation), whereby the antiseptic effects of silver are exerted deep into sub-mucous structures, when, as is well known, gonococci and other pathogenic organisms find and maintain a lodgement in spite of energetic measures to eradicate them. Clinical results indicate that silver vitellin will replace the other silver compounds in the treatment of gonorrhoea and in diseases of the eye, nose and throat. In forty cases of gonorrhoea, treated by Dr. H. M. Christian, at the University Hos-

pital of Pennsylvania, cessation of discharge was obtained, in fifteen cases, within ten days, although the strength of solution employed was as high as 5 per cent. In no instance did it produce irritation, but was of distinct value, from beginning, in allaying inflammation, diminishing discharge, reducing the number of gonococci and shortening the duration of the disease. Dr. Swinburne, of New York, treated 66 cases of gonorrhoea at the Good Samaritan Dispensary. In 64 of these cases the unpleasant symptons were done away with entirely; amount of discharge was markedly diminished from the start, the gonococci were reduced in number, and the course of the disease shortened.

Dr. Edward Martin, Professor of Clinical Surgery, University of Pennsylvania, says that this silver compound is the best that he has ever used, and further says that it is remarkably effective and absolutely non-irritating.

IRON VITELLIN.

This iron they claim differentiates itself from ferratin, iron peptonate, etc., by the fact that it is not decomposed in the stomach. Digestion of this compound with an artificial gastric juice, for four hours at body temperature, fails to split off even a trace of iron, hence it cannot be astringent or irritating to the gastric mucous membrane, as are the other compounds.

A summary of the results obtained thus far indicates that the advantage of iron vitellin over Bland's mass, iron peptonate, etc., consists of its more easy assimilation, its freedom from digestive disturbance, and its greater general beneficial influence upon the sign and subjective symptoms of blood impoverishment.

TANNIN VITELLIN.

They claim this to be an intestinal antiseptic and astringent.

Clinicians have availed themselves of the use of this drug in cases of typhoid fever because it sterilizes the urine to the extent of complete disappearance of typhoid bacilli from that fluid.

The essential feature of this compound, they claim, is that it it so combines a non-toxic antiseptic and astringent that the compound is uninfluenced by the gastric juice, but is gradually split up into its components as it passes downward through the intestines; hence, it cannot disturb the stomach, and it exercises anti-

septic and astringent properties in the lower part of the intestinal canal.

This remedy has proven of marked value in a large series of cases of acute catarrhal enteritis, chronic diarrhoea, due to lesions in both the small and large intestines, and in infantile diarrhoea it produced prompt cessation of bowel movement and relief from symptoms of inflammation. The field of application of this compound is typhoid fever and inflammatory diseases of the intestines, associated with diarrhoea, and the symptoms of autointoxication dependent upon intestinal putrefaction.

These gentlemen have also discovered a new dry surgical dressing, which is a pink, impalpable, odorless, tasteless and insoluble powder containing 45 per cent. of bismuth, 15 per cent. of iodine and 3 per cent. of formaldehyde in definite chemic combinations. The effect of this compound on wounds is antiseptic, astringent, dessicating, and granulative producing. These gentlemen are reliable, and I think that they have done a great and good work for the medical profession, as well as the sufferers of the diseases in which these remidies are indicated; and I think these compounds are entitled to official recognition in the Pharmacopea.

Report of the Section on Obstetrics.

PERINEAL LACERATIONS—THEIR PREVENTION AND THE NECESSITY FOR THEIR IMMEDIATE REPAIR.

By E. A. MOYE, M. D., Chairman, Greenville, N. C.

As Chairman of the Section on Obstetrics, I have decided to call the attention of the Society to the subject of perineal lacerations. In my opinion, this condition is often not detected, and when it is it is seldom given the thought and attention which its importance demands. All of us are familiar with the classical symptoms of this unfortunate condition. The dragging down pain, the lack of support for the pelvic organs and the disturbance of the functions of the bladder and rectum, are conditions met with almost every day. When the laceration is complete the condition is still more pitiable. The inability to control the bowels has made the sufferer shun society and spend her time brooding over her misfortunes until she is both a mental and physical wreck.

During my limited experience I have seen so many of these unfortunates that I have been forced to the conclusion that the proper attention is not given to the prevention of this condition, and I shall emphasize some of the means which have been of service to me in decreasing the number of these unfortunate accidents.

In considering the subject of perineal lacerations there are three factors which are to be considered:

First. Resisting power of the perineum. If the patient is in good health at the time of labor, the resisting power will be much greater than if the patient is weak, anaemic and in poor condition, and tears will be much less likely to occur. Hence the first point to emphasize is that we should get our patients in tip-top condition before the time of parturition.

The second factor to be considered is the size of the child's head. Of course, if the size of the child is out of proportion to

the size of the vaginal outlet, lacerations will unavoidably result. Over this we have no control and I shall not discuss it any further.

The third factor which enters into the discussion of this subject is the speed with which the child is forced through the birth canal. And it is to this point that I wish especially to call your attention, for upon this largely depends our success in preventing lacerations, and over this we have more control than any of the others.

We can regulate the rapidity with which the child is forced through the birth canal in two ways. First, by pressure upon the presenting part and at the same time pushing the head up under the public arch, thus causing the head to be born in its smallest circumference.

Second. By controlling the pains by directing the patient when and how "to bear down," and the judicious use of chloroform.

Another point which has been of great service to me is to prevent the expulsion of the child's head until the pain has passed. During the pain the perineum is firm and tense, and much more likely to tear than if the head is delivered between the pains, when the perineum is soft and relaxed.

In my opinion, the judicious use of chloroform will do more to prevent lacerations than all other means combined. It should not be given until the latter part of the second stage when the head is well down, nearly or quite to the perineum. Then the pains become more frequent and more severe. Just before the patient makes any outcry, there is a slight descent of the head.

This generally precedes the pain for a few seconds, and this is the time to give chloroform. The administration should be continued as long as the presenting part is pushed down and as soon as it begins to retract should be discontinued. This should be repeated with each succeeding pain and just before delivery, should be pushed almost or quite to, surgical anaesthesia.

An Esmarch inhaler will be found very useful for administering the chloroform. A few drops can be poured on it and the inhaler can be laid over the patient's mouth and nose without any danger.

If these precautions were strictly observed the danger of lacera-

tion would be much diminished, especially in normal labors. Of course, when forceps are used, the danger is very much increased, but still if they are carefully and properly used, and if the operator will use as little force as possible, the danger can be very much diminished. In my practice I often remove the forceps when the head bulges the perineum and I can control it without the use of instruments. In this way lacerations can often be avoided and if not avoided their severity can be very much diminished.

The rotation of the occiput posteriorly also increases the danger of laceration and in breech deliveries the life of the child often depends upon the prompt delivery of the after-coming head and the tissues do not have time to stretch and hence lacerations are more liable to occur. In many instances the head is delivered without a tear, or a very slight one, but the shoulders are delivered too quickly and the slight tear is converted into a severe one. If the physician will remember all these dangers and guard against them, much can be done toward the prevention of lacerations and even when they do occur if they will be prudent and cautious, complete or severe lacerations would almost be unheard of.

But, in spite of every precaution, all of us will have in our practice lacerations more or less severe. The great Dr. Lusk once told me that when a physician told him he did not have any lacerations in his practice, he knew he was either telling a falsehood or did not have sense enough to know a laceration when he saw it.

After every delivery it is the duty of the physician in attendance to make a careful examination of the perineum. It matters not what the hour may be, or how much of a hurry he is in, or how tired and exhausted he may be, this rule should be strictly adhered to. I know from experience how strong the temptation is to wait for a more convenient season, especially after a long and tedious labor, but I do not think it is justifiable to wait unless the condition of the patient is so serious that it is not advisable to tax her strength any further. The parts should be washed with an antiseptic solution, and two fingers having been introduced into the rectum, by pulling the posterior vaginal wall forward, bring it into view. By this means it is a very easy matter to find out whether there is any tear or not. If there is no tear no harm is

done. On the other hand, if a tear is found, now is the time to repair it, if in his judgment it needs repairing. The question whether or not it needs repairing is a matter of judgment and common sense. It is better to err on the side of safety, so if there is any doubt about it always repair it. No rule can be laid down that will fit all cases, as it is a matter of individual judgment, but a safe rule to go by is to always repair it if the tear extends down to or nearly to the sphincter ani or if the perineal body is involved. The action of these muscles is to pull the torn surfaces apart and it is almost impossible for union to take place unless they are united.

There is no valid objection to the immediate operation. It is not difficult, it is not very painful and its performance diminishes the risk of infection and shortens the puerperal period. Then, too, at this time, the tissues are so benumbed, that it is rarely necessary to give an anaesthetic unless the tear is quite an extensive one.

The operation is very simple. The patient is placed across the bed with her hips resting on the edge and her legs held by two assistants. The parts are washed with some antiseptic solution and a piece of sterile sponge introduced into the vagina high enough up to catch the discharge and to keep the parts clean. The middle and index fingers of the left hand are introduced into the rectum and the posterior vaginal wall pulled forward, the thumb and other fingers separating the labia, bring the tear into view.

The sutures employed vary very much and are largely a matter of choice. Personally, I use catgut for the repair of the vaginal mucous membrane and silk-worm gut for the skin. Silver wire is largely used and is highly recommended by the best authorities, but I never had any experience with it. It is important to begin the sutures at the upper angle of the tear, and many times the success or failure of the operation will depend upon this point, for if the upper angle of the wound is not completely closed, the lochia will drain into the wound, form a pocket and prevent primary union.

In introducing the sutures the operator should use some form of perineal needle. One with a round handle is very troublesome

because it is very difficult to keep from turning, and for that reason I never use it.

With the index and middle fingers introduced into the rectum, high enough to bring the upper angle of the tear into view, when the posterior vaginal wall is pulled forward, the needle should be introduced about one-eighth of an inch from the margin of the wound and should emerge at a corresponding point on the opposite side, so as to have the sutures buried. My rule is to begin at the upper angle of the wound in the vaginal mucous membrane and introduce enough sutures to completely close it. Then in reparing the wound in the skin, it is best to inroduce the first suture at the posterior angle of the tear, so as to get good apposition near the sphincter ani. Another point of importance is to be careful not to tie the sutures too tight, for after the parts swell they will be very painful and often tear out.

The silk-worm gut sutures should be removed about the tenth day. As a rule the catgut will be absorbed, but it is a good rule to remove all those that have not been absorbed at this time.

If the labor has been conducted in accordance with aseptic or antiseptic principles, if no syphilis exists, and the vitality of the tissues has not been impaired by œdema or long continued pressure, primary union almost always takes place and the patient will be in much better condition than if the wound had been allowed to heal by granulation, besides the time saved by shortening the puerperal period.

Much of this paper will doubtless seem very unnecessary to most of you gentlemen, but if what I have said should prove of benefit to any member of this Society, and if the number of neglected perineums should be diminished, I shall be more than repaid for the time I have devoted to this subject, and I will not feel that I owe any apology for taking up the time of the Society with this discussion.

DISCUSSION.

Dr. Highsmith: Mr. President:—I would like to say that I enjoyed the paper just read very much. This is a subject which every general practitioner should pay especial attention to, for it is due to lacerations which have been untreated that more than 40 to 50 per cent. of the cases of gynecology are brought about.

We must never be in too great a hurry in attending these cases.

Give them plenty of time. I usually wash the perineum thoroughly with lysol solution, then with sterilized vaseline with my hand, which has been thoroughly cleansed. I knead the perineum when the head comes down, especially between pain, then hold the head back until the perineum has been thoroughly relaxed. Then as the head passes through the perineum, protect the perineum with my hand, and in this way, you can avoid many lacerations. If the case be a primipara, then of course we have many times to use chloroform—use it to obstetrical anesthesia—do not use too much, for I have seen frightful hemorrhages occur, but use it simply to relax the perineum, for it will make the pains more bearable, give the patient strength and overcome nervous manifestations.

I always carry in an obstetrical bag everything necessary to restore a laceration in case we have one. Where I have been called in late and find an accipito posterior position and the forceps have to be used, we are apt to have laceration. I repair the perineum at once, and within the month re-examine to be sure that the outlet is in good shape, because, as we know, a great per cent. of the cases that come to the hands of a gynecologist are due to the want of proper care in after labor. Fifty per cent. I should say arise in that way. I think it a mistake that the general practitioner is apt to make in not educating his patients to the great importance of having these examinations made within a month or six weeks, that the disease, if any is found, might be relieved. Many cases of cancer and untold other diseases legion in number could be prevented if the perineum with the outlet were kept in a healthy condition. I have enjoyed the paper very much.

Report of the Section on Gynecology.

THE CLINICAL ASPECTS, SUGGESTING OR INDICATING CANCER OF THE UTERUS.

J. ERNEST STOKES, Chairman, Salisbury, N. C.

No pelvic condition suggests to the gynecologist, perhaps, a greater helplessness, a more profound sense of the inability to conquor, cope with, or even alleviate, in so appalling majority of instances, as the pathological lesion—cancer of the uterus—when borne to recognition through an opportunity offered by a late appreciation of the clinical aspects.

The more especially when, as is so often the case, the examination follows on a tardy, indefinite appreciation that even any diseased condition exists, either by the patient herself, or the patient's physician.

Can there be any pathological process, within that class of cases popularly known as diseases of women, which demands the more ready and willing co-operation of womankind, with the medical attendant, than a carcinomatous process within the uterus? Such co-operation should exist even with the slightest manifestation of the presence of such a process.

While, on the other hand, the medical attendant should be conscience-stricken, and filled with an ever depressing appreciation of duty not performed, if he once fails to listen to, or ignores, one single significant complaint of his patient, or, again, does not insist upon a thorough examination after he has noted a suggestive possibility of this pathological process in a patient.

The main causes for the so frequently belated recognition of the clinical aspects of cancer of the uterus are threefold:

1st. Cases in which the clinical symptoms appear late, are not marked, and are not appreciated by the patient, through her ignorance.

2d. Cases in which, through the great sensibility of the patient, no mention is made by her of the existing symptoms, nor advice solicited.

3d. Cases in which the medical attendant failed to duly appre-

ciate the clinical symptoms related to him, failing to make a careful vaginal examination, or, making one, fails to appreciate the clinical aspects suggesting or indicatiag carcinoma.

The profession at large clearly recognizes, and the laity should be educated up to the incalculable importance of the very earliest possible recognition of every form of malignancy. Now, in no other pathological process, will a short delay or a slight procrastination more quickly convert the possible eradicable stage into the impossible, the ineradicable.

The duty of the physician is first to educate, and most earnestly impress upon woman the great necessity of noting and relating all irregularities, and symptoms, however remotely referable to the uterus they are. Then turning to himself, he should ever bear in mind the terrible frequency with which cancer of the uterus occurs, its harrowing results, and its frequently fatal ending.

With these facts in mind, one will not likely let the early symptoms of cancer of the uterus escape him. The physician will thus place himself in a way towards obtaining a vaginal examination, and from this examination he obtains the clinical aspects, which may be present, of any local tissue changes.

From this moment on, the burden of responsibility is upon the medical attendant, to recognize the clinical aspects and their significance. He should inform and impress his patient with these facts, and above all he should urge that subsequent action be taken with all possible haste.

The clinical aspects of cancer of the uterus are directly connected with these facts just noted. For the presence of this lesion is almost invariably appreciated, after a fatal delay—yet acknowledged by physicians, surgeons and pathologists, that the only possible hope of eradicating a cancer of the uterus lies in an early operation, which must necessarily be preceded by an early diagnosis, i. e., a full recognition of the first clinical aspects suggesting the lesion.

Again, it is acknowledged, that the frequency in recurrence of the carcinomatous process, following an enucleation, is due, without doubt, to the state of progress the disease had made previous to the primary operation, or possibly to an unavoidable

transplantation of the carcinomatous elements into adjoining healthy area, owing to the advanced state of destruction the tissue was in, and which bears more directly upon the text of this paper—that the earliest clinical aspect of this disease is, in every detail, different from the clinical picture presented, both constitutionally and locally, by the extension taking place in the later stages.

Cancer of the uterus is a distinctly local process, limited to narrow confines in its incipiency. The etiology of cancer of the uterus, along with the etology of cancer occurring elsewhere, remains undetermined. Notwithstanding, that from the time of Waldeyer's conclusion, that all carcinomata owe their development to a proliferation of epithelium, up to the more recent theory—the parasitic, which concludes that carcinoma is an infectious disease of a slow type. No subject in pathology has been given more enormous, untiring labor and attention. From a clinical standpoint Dr. Kelly, has called attention to a significant causal relation, between cancer of the cervix and the traumatism of child birth. Out of fifty of his cases of epithelioma of the cervix, twelve had been pregnant. In eleven cases of adeno-carcinoma of the body it was found ten were married. In thirteen cases of adeno-carcinoma of the cervix, twelve had been pregnant.

FREQUENCY OF CANCER OF THE UTERUS.

Carcinoma affects the cervix uteri more often than any other part of the body. W. R. Williams computed in 1896, that there were eight thousand women suffering in London, with carcinoma of the uterus. Dr. Welch places the uterus first in the list ef organs most frequently affected with primary cancer, and concludes that somewhat less than one third of all primary cancers are seated in that organ.

From this point on, the different varieties of cancer of the uterus present certain clinical aspects not in common, so that for the sake of clearness, Dr. Cullen's histological classification will be used, giving first a brief anatomical description of the uterus, then the clinical aspect of the several types of cancer.

ANATOMY OF THE UTERUS.

The uretus in the adult is pear shaped, averaging about eight centimetres in length, and from four to five centimetres in its greatest transverse diameter. Its postering surface is convex, the anterior aspect being flattened, or slightly concave.

The lower third, or cervix projects down into the vagina for one centimeter or so, is rounded in contour, containing a small central opening, "the external os." This opening may be circular, or as a transverse slit in appearance, with smooth closely adjusted edges. In women who have borne children there is always a roughening or irregularity of these edges, due to more or less laceration, subsequent to labor.

This slit or opening divides the cervix into an interior and a posterior lip. The latter being usually somewhat longer, and thinner. The surface is smooth and of a pinkish hue. If the laceration of the "external os," is extensive there is apt to be a gaping of the lips, with an eversion of the bright red inner lining —the mucosa. This latter fact, should be invariably noted by the medical attendant, and most carefully watched, and followed from time to time. For it is in just these cases, with a most inexplicable frequency, that carcinoma of the cervix is subsequently noted.

The uterine walls vary from 1.3 to 2 centimeters in thickness. The muscular walls of the body may be divided into three fairly well defined layers, an inner longitudinal, lying in direct contact with the mucosa; a middle layer, much thicker, consisting of bundles of fibres having a somewhat circular arrangement, and containing many large veins; and an outer muscular layer, composed of longitudinally arranged fibres.

The interior of the body of the uterus consists of a narrow cavity extending from the "internal os" to the fundus, between the anterior and posterior walls. It averages about four centimeters in length, and from three to four centimeters in breadth.

The mucous or lining membrane is covered by one layer of cylindrical ciliated epithelium. It is yellowish pink in color, and made up of tubular glands, and an intervening substance the stroma.

The cervical canal extends from the "external os" to the

"internal os." It is lined by mucous membrane of a reddish hue which is covered by cylinderical epithelium, though at times the squamous epithelium of the vaginal portion extends well up into the canal.

This distribution of the epithelium bears a direct relation to the clinical aspects of cancer of the uterus, as the varieties of carcinoma which will be taken up are of a histologic classification.

As the blood, nerve, and lympathatic supply to the uterus bear no especial relation to the clinical aspects of carcinoma of the organ, they will not be taken up here.

EXAMINATION PER VAGINAM.

One of the first important steps towards obtaining a decisive knowledge of the presence of carcinoma of the uterus is obtained by a viginal examination. The value of such examination, however, is dependent on how thorough, careful and systematic a manner it is conducted.

In the earlier stages of carcinoma of the cervix, and in all the stages of carcinoma of the body of the uterus, much more definite information can be obtained by a digital examination, i.e., by the sense of touch, than by the too frequent practice of employing the speculum and sight.

One should train the sense of touch as to the normal condition of the vagina, the cervix and the body of the uterus. It will then be possible to note accurately a deviation from the normal consistency of the cervix, by touch, which may be followed then by inspection, if necessary.

CLASSIFICATION OF THE CARCINOMA OF THE UTERUS.

1st. Squamous—cell carcinoma of the cervix—epithelioma.
2nd. Adeno-carcinoma of the cervix.
3rd. Adeno-carcinoma of the body.
4th. Squamous—cell carcinoma of the body.

THE CLINICAL ASPECTS OF CANCER OF THE UTERUS IN GENERAL.

The clinical aspects of the several varieties in the above classification of cancer of the uterus differ distinctly in some respects.

In other respects, however, the clinical picture is common to each variety.

The first and most significant point is that in the earliest stages of every form of cancer of the uterus no definite nor well defined symptoms may be present.

The clinical aspect may be merely suggestive to the slightest degree, and the only possible way to obtain a true, definite diagnosis in such cases is by curettage.

It then behooves every physician to be always on the alert, to urge and insist upon the uterus being curetted, where there is slightest suspicion of cancer of the uterus, however insignificant the deviation from the normal may be. His obligation is not, however fulfilled, even then, unless the opinion of a competent pathologist is obtained.

In the light of the present perfection to which the pathologists of to-day have risen in the diagnosis of cancer of the uterus through histological examinations, every physician who neglects to subject the material obtained through a curettage to a histological examination assumes a grave responsibility. He may be gravely reprehensible if, in later years, the same patient presents an advanced condition of cancer of the uterus. It matters not for what reason the uterus was curetted, the scraping should be invariably examined. No matter how slight the uterine hemorrhage may be—if it cannot be explained—curettage should be performed.

In the earliest stages of cancer of the uterus a diagnosis positive enough to warrant any radical measures can not be made without first a histological examination of the curettings, or of small pieces of tissue obtained from the uterus in question.

CONSTITUTIONAL SYMPTOMS.

The constitutional symptoms of cancer of the uterus do not as a rule manifest themselves until the second stage, or that stage in which the local symptoms are so pronounced as to attract attention of the physician and arouse the apprehension of the patient. Nevertheless they are of value—of great value—to the physician in urging or justifying an examination in those cases in which the patient lives in a vain hope that the steadily-increasing hemorrhages are the forerunner of the change of life, and consequently consoles herself, keeping her own counsel accordingly.

Pain, though by no means a constant symptom, is at times

prominent. It is chiefly lumbar, very acute at times, and with it there are neuralgic radiations in different directions.

The digestive symptoms, loss of appetite, vomiting, constipation, or diarrhoea, may be present. The skin becomes a pale yellow, is dry and harsh. Cystitis, with its frequent, painful urination, comes on, followed by a sub-acute uremic condition. This condition is rapidly followed by emaciation, general lassitude and even mental aberations.

LOCAL CLINICAL ASPECTS OF CANCER OF THE URETUS.

First Variety Epithelioma.—This form of carcinoma of the cervix is usually divided into three states. It is most common near the menopause and is not, as a rule, associated with any irregularity of menstruation.

The First Stage, or the Condition of Hardness and Induration of the Cervix.—The first symptom perceived by the patient is usually a hemorrhage of a very mild degree; often it is just a bloody discharge. This is the form and stage of cancer of the uterus, in which the patients are most apt to attribute the flow of blood to a prolongation of the period, or if the menopause has come on, then to a return of the menstrual flow. The escape of blood varies as to interval. It may be brought on by coitus or some active exertion.

On making the vaginal examination, the cervix will be found enlarged, hard, infiltrated, of a smooth glazed appearance, or at times a few finger-like processes projecting from its surface. The examination may cause more or less of a hemorrhage; again, a very common appearance is that of a cauliflower-growth, with numerous fissures and excrescences.

Second Stage.—This stage presents the first distinct constitutional symptoms, mentioned above, though, as a rule, the general appearance of the patient is good, and symptoms very slight. The hemorrhages increase in amount and frequency. During the interval between the hemorrhages there is generally a vaginal discharge. This at first is thin and watery, of a fetid odor, and irritating. The vaginal examination reveals a general breaking down of the cauliflower-growth of the first stage. Small bits of tissue can be brought away with infiltrated edges. The induration of the edges may extend up into the vaginal vault.

Third Stage.—In this stage the local condition is an exaggerated degree of the second stage. The constitutional symptoms become marked and steadily progressive. The pain in the lumbar region extends down the thighs and legs. Blood is passed with the urine and patient takes to her bed.

Locally there is a fetid, loathsome odor. The hemorrhages become excessive, even alarming, and the patient is beyond permanent aid. How different a picture these many cases would make had only patient and physician co-operated and an early diagnosis ensued.

Second Variety—Adeno-Carcinoma of the Cervix.—This variety occurs most often between the ages of 45 and 50. Extension is exceedingly rapid and the growth is of the most malignant type. This growth may occur as a rounded nodule, at times involving the entire cervix before any breaking down takes place. Later this carcinomatous nodule breaks down forming a sloughing cavity continuous with the normal cervical canal.

If the lesion commences in the canal near external os, the cervical lips are rapidly involved, and soon appear hardened, thickened, and glazed in appearance.

The loss of substance, however, is not marked, as in the first variety—the epithelioma. In this variety, the tendency is to extend laterally, at times, before there is any indication of involvent of the external os, or breaking down of the cervical tissue. Hence, on examination, it is very important to note the mobility of the uterus and the presence of induration laterally to cervix.

Third Variety—Adeno-Carcinoma and Squamous Cell Carcinoma of the Body of the Uterus.—This variety occurs at a later period of life than any of the others, generally between fifty and sixty years.

At the beginning, the uterus generally is normal in size, as the lesion is very circumscribed. Later, however, the fundus uteri increases in size and becomes soft and flabby to the touch. Growth is slow and no positive diagnosis can be made, save by curettage and a histologic examination made of the tissue thus obtained.

DECIDUOMA MALIGNUM.

Deciduoma malignum is another morbid condition, which, though distinct from cancer of the uterus, so intimately involves the uterus that it may not be out of place to mention it here.

The following points have been taken direct from Cullen, on Cancer of the Uterus:

It is a malignant process, which is found in the body of the uterus during or immediately following pregnancy, at the placental site. The growth is irregular in form, reddish in color and friable. It tends to form metasteses, which are frequently found scattered throughout the vagina.

Dorland has pointed out the close relation existing between the occurrence of a vesicular mole and the appearance of deciduoma malignum—as in over 43 per cent. of cases tabulated by him, there had been a history of the expulsion of a vesicular mole, prior to the appearance of the disease.

This fact should impress upon us the great importance, in every instance, in which a mole is expelled, to make an immediate histological examination of many portions of the specimen. If there be signs of malignancy, not definite enough to warrant very radical measuress then the uterus may be curetted.

As might be supposed, severe and frequent uterine hemorrhages are among the first indications. Later stages develop a thin, offensive, watery discharge; pain in lower abdomen follows, the patient becoming anæmic and emaciated.

As time goes on there is odema of the vulva, with vaginal metasteses appearing. The patient becomes more and more prostrated, and there may be hemoptysis, due to pulmonary metasteses. At times there is a slight elevation of temperature, due to absorption of septic materia.

DIFFERENTIAL DIAGNOSIS OF CANCER OF THE UTERUS.

The differential diagnosis of cancer of the uterus will not be taken up here, as, in every instance, without the possibility of an excuse, a histologic examination should be obtained, where there is a shade of a doubt. In concluding, I can only urge again upon the medical profession, the great opportunity which is theirs to save the lives of many women by the one vital act—An

Early Recognition of the Clinical Aspects of Cancer of the Uterus.

In the last six cases, which I have seen, in which the clinical diagnosis of cancer of the uterus was verified by the histologic examination, every case, save one, presented an advanced condition of the third stage, absolutely beyond any possible radical measures.

The condition of these patients, both locally and constitutionally, simply presented that hopelessly destructive process of the advanced stages of cancer of the uterus.

FURTHER OBSERVATIONS ON OVARIAN CYSTS IN COLORED WOMEN.

By HUBERT A. ROYSTER, A. B., M. D., Raleigh, N. C.

At the beginning of my practice I was steadfastly imbued with the idea which had been held for so many years, that cyst of the ovary rarely or never occurred in negro women. Accordingly, it was a matter of surprise during the early part of my gynecological work to come upon three cases within a comparatively short period. These were reported two years ago (1). While looking up the subject at that time my interest was first enlisted by I. S. Stone's article in which there were collected replies from a large number of the prominent operators in the South. The experience of these different surgeons varied very widely, the consensus of opinion bearing out in most instances the former teaching, except that from New Orieans, where ovarian cysts were found to be quite as frequent in the negro as in the white race. In a comprehensive paper published a year and a half ago (2), Dr. Daniel H. Williams of Chicago, refers to my reports as well as to ten others and presents a total of 220 such cases from different observers, thirty-three being in his own practice. He points out some sources of error, and insists upon the fact that not only does ovarian cystomas occur in the negro

(*) Trans. Tri State Med. Association, 1900.

(1) Phila. Med. Jour., Dec. 29, 1900.

(2) Loc. Cit.

race, but "that the colored woman is as subject to cystic degeneration of the ovaries as the white woman." (Michinard.)

In spite of these recent findings, many writers and many teachers continue to reiterate the original doctrine and members of the profession at large still accept it as a fact without question. Ovarian cysts are not thought of as a rule when a negro woman is on the examining table, and, as I stated in previous paper, they "are likely to be slighted in the diagnosis of doubtful abdominal enlargements" in that race. Abundant evidence exists to prove that these tumors are much more frequent than was formerly supposed. In order to further emphasize this fact, I wish to record my more recent experience.

During the past twelve months I have operated on no less than five ovarian cystomas in negro women. Of these one was a mulatto, and the other four of pure negro blood; three had multilocular cysts and two unilocular; the average age was thirty-eight; the number of deaths was two. In all, save one, intestinal adheisons of greater or less extent were encountered, and to these were attributable the deaths which occurred—one from post-operative ileus owing to the necessarily prolonged handling and lacerating of the bowels in stripping them off the tumor which they surrounded in wreath-like fashion; and the other from shock produced by unsuccessful attempts to dig the cyst out of a mass of matted intestines, the patient dying six hours afterwards with the growth still in her abdomen.

Ordinarily, the removal of an ovarian cyst is one of the simplest abdominal operations—one which many an operator is rejoiced to have for a "clinic" case. Opening the abdomen, puncturing and evacuating the cyst, securing the pedicle and closing the wound—all this is quickly and safely done. But the existence of intestinal adheisons, the great bugbear of abdominal surgery, forces upon the operator conditions which tax the skill, and especially the patience of the most resourceful surgeon. It is just this state of affairs which serves to keep up the rather high mortality of ovariotomy in colored women as compared to this operation in white women. The former are either not offered the privilege of the operation, or refuse to have it performed until the cyst has, by its growth, become universally adherent. In my

experience the operation under these circumstances is as difficult and as dangerous as a hysterectomy. Most colored women will not permit any operative interference before the period of absolute necessity compels them to seek relief or die. It is a hopeful sign when one gets hold of a small-sized, non-adherent cyst of the ovary in a colored woman, as I did in the last one operated on, and is able to remove it with ease and without danger.

In conclusion it may be said that the five cases referred to were all seen at St. Agnes' Hospital, an institution intended exclusively for colored women, where a number are operated upon annually. This may in some measure account for the relatively large percentage.

ETIOLOGY OF GYNECOLOGICAL DISEASE.

By WM. A. GRAHAM, M. D., Durham, N. C.

Whether or not there is to-day an actual increase in the number of women suffering with gynecological disease is, perhaps, an open question. Many claim that the recognized frequency is due to more thorough methods of examination, and to the education of womankind, that these diseases exist and should be remedied. While statistics on such a subject are, from its nature, hard to collect, it is a well known fact that a very large percentage of women, married and single, old and young, do suffer with disease of the genital organs in its various forms; and the large percentage makes it of interest to the general practitioner, especially as to etiology, and, if possible, prevention.

Among these causes, veneral disease, child-birth, with its attending injuries, and sepsis, have been and will continue to be most important and most common. They have been long recognized and carefully studied; but it is probable that its aggregate amount of disease arising from less common and well recognized causes is as great or greater than the amount arising from these three great causes.

Diseases other than gynecological—lack of attention during the establishment of the menstruation and during the menstrual periods, efforts to prevent conception, traumatism and occupation seem to me to be the more important of the lesser causes.

Gynecological disease is caused by, or associated with, disease of various kinds: e. g., the infectious diseases of childhood, with the accompanying vaginitis, producing a weak spot for infection, or an alteration of secretion; la grippe, with its tendency to produce irregular periods, menorrhagia and metrorrhagia; enemias, resulting in amenorrhea, scanty menstruation, obesity and sterility; disease of the digestive tract, including enlarged tonsils, gastric neuroses and inflammations, hepatic congestions, intestinal indigestion, constipation and hemorrhoids, which, with the resulting functional involvement of the nervous and genital symptoms, completes the vicious circle and produces the typical neurasthenic, so common among the women of the present generation; and though it is often difficult to decide, there is probably an appreciable percentage caused by inherent or acquired weakness or instability of the nervous system.

The question of the proper care and attention, as to habits, dress or occupation during the menstrual periods of the young girl, and at the time of the establishment of the menses, is one that is difficult and obscure, because of the large number of small details which make up the whole. The one well recognized fact is that girls, as a general rule, do not receive this proper care, due largely to the changing conditions of social life, the months in her round of engagements, and the teacher in her school duties, forgetting that the physical side of the young woman needs careful study and thought; while, simultaneously, the child is advancing much more rapidly to womanhood, through social intercourse, than was the case a generation ago. The result is the familiar picture—dresses to the shoe top and the compressing corset. A few years later we find her in college, hysterical at every examination period; and again we see her, the invalid mother of her first born child, a result which shows that there is existing to-day, in our social life, an evil which is robbing many women of health, to which they have a right, and transmitting to future generations a weakness which renders them more liable to disease of all kinds.

There is a growing tendency among women to prevent conception. Social duties, financial difficulties, the gossip of friends and many other influences foster a wish in the married women

to have as few children as possible, and many are the expedients resorted to in order to accomplish it. An increased knowledge of antiseptics leads to the use of strong and irritant solutions, damaging to the integrity of the mucous membrane. The commercial spirit of the manufacturer has produced the silver "preventative" and the rubber "womb veil," to be worn in the cervix from period to period; and the constant use of any such appliances must be a source of irritation or infection, giving, as it does, an opportunity for increased or unlimited intercourse. Inflammatory reaction in various situations is a natural consequence and in its extent may involve other structures than the vagina, including the external organs, uretha, bladder, uterus, tubes, ovaries and pelvis connective tissues, and aside from the deletrious physical effects, there must be considered, too, the state of mind and lowered moral tone into which these practices lead, until the result is a request to be rid of the child that is to be or an attempt to rid herself of it.

In the widening field of occupation of the woman of to-day, embracing, as it does, hard labor, often in women physically unfit to do such work, there is found another contributing cause of gynecological disease. The field of their occupation has widened rapidly and then there has not been a proper adjustment of the conditions under which the woman works to the condition of the woman. The wish of the woman to be independent, coupled with that of the employer to get the greatest amount of work for the smallest possible outlay of money, has resulted in crowded workrooms without proper ventilation or proper lavatory facilities, long hours, poor wages and steep stairs to be ascended and descended. In the home, too, we find the house-girl habitually handles utensils and furniture unnecessarily heavy and does much overhead work. There is apt to be with each menstrual period an increasing tax on the nervous system, resulting finally in ill-health, on the one hand, functional derangement of the physiology of menstruation, or, on the other, displacements or inflammatory disease of the pelvic organs.

All physicians welcome the increasing outdoor life, with its fresh air, sensible clothes, hearty appetite, healthy exercise and general improvement in muscular development, as being what

woman has long needed, and the effect of which, on the whole, can be beneficial only. But it must be remembered that in golf, tennis, the bicycle, basket-ball, etc., there exists many opportunities for traumatism, with a displacement of the uterus, often unrecognized and untreated, until the strained ligaments have lost their strength, and nothing short of operative treatment will remedy it, after months or years of insomnia, restlessness and pain. Traumatism has not received the attention it deserves and should be more carefully inquired after, and more importance be attached to it in arriving at a solution of symptoms, mainly nervous, vague and misleading, and often concealed on account of the natural delicacy of the young woman.

To complete the list of causes, many more might be added and enlarged upon, but it has been my purpose to call attention, as briefly as possible, to those which are of especial interest to the general practitioner, and over which he has more control than the specialist. I believe that a consideration of causes, existing at present, which did not formerly exist, must logically lead to the conclusion that the diseases of women, and especially young and unmarried women, are probably increasing, and that prevention of this increase can only take place through the influence of the family physician. The subject is one which is complex, and it is often difficult, sometimes impossible, to determine the exact cause of an existing derangement or lesion; and only through study of the causes can we expect the most rational therapeusis or successful prevention.

Report of the Section on Pediatrics.

ACUTE ANTERIOR POLIOMYELITIS.

By E. D. DIXON CARROLL, Chairman Raleigh, N. C.

Several things influnced me in choosing the above subject for a paper in this section of the Society, one of the chief being the frequency with which this disease is intirely overlooked in its initial stage. If there is any necessity for early diagnosis in this disease (as well as others), it seems that it is lost sight of by the general practitioner. I have noticed from personal observation, and in reading the recorded cases, that the diagnosis is rarely made till the paralysis is well established, and generally after atrophy has already begun.

Is there any virtue in absolute rest during inflammation? If so, we should make the diagnosis in this disease early enough to get the benefit of the knowledege we have in the treatment of inflammatory conditions.

ETIOLOGY.

Acute anterior poliomyelitis is a disease of childhood, and only about ten per cent. of the cases occur after the tenth year of life. Three-fifths of the cases occur in the first three years, those in the first year occurring in the latter six months. The sexes suffer equally. Four-fifths of all cases occur in the hot months, (Sinkler), and most frequently in cool weather following a very hot period. Exposure is only occasionally traced. Traumatism or over exertion has sometimes directly preceded an attack. There is no proof that dentition has anything at all to do with the onset, though it so often occurs during the period of dentition. In most cases the child is perfectly well when the attack occurs, but defective health precedes it occasionally. Many of the older authorities thought this disease was likely to follow any acute febrile effection, but now we believe the beginning of the attack itself is that of an acute febrile affection, and paralysis is a symptom of the disease proper, and not a sequella of some antecedent trouble

The disease occurs occasionally almost as an epidemic, and it is noted that a completely isolated case is rare. Several children of different ages in the same family may be attacked within a week or two of each other. This has led, of course, to the theory that it is a germ disease, and that is certainly the best working hypothesis at present, though no germ has been found meeting Koch's requirements.

PATHOLOGICAL ANATOMY.

The lesion was first described by Prevost (1865), and the spinal cord leison is found to be constant. Few patients die early in the disease; at least few cases are diagnosed if they do; and so the exact cause and condition which produces the old lesion found afterwards is not known; and the acute lesion has only been demonstrated a few times. It may be proven hereafter that a great many of our cases of "acute indigestion" are undiagnosticated acute anterior poliomyelitis. If postmortem examinations were the usual and not the excepitonal cases the medical profession would probably be more careful in the minute diagnosis, and the lesion of this trouble would probably have been more fully studied.

The examination of the cord in an old case of the disease shows externally an atrophy of the anterior cornu of the cord in certain areas, depending on the location of the paralysis. Beside the distinctly atrophied area, the entire cord in that locality looks smaller than the healthy portion. The lumbar enlargement is the most frequently diseased, and even in bilateral paralysis, one side is always more atrophied than the other. The anterior nerve roots appear small and gray. Upon microscopic examination the leison appears to be almost exclusively in the large gray multipolar cells of anterior cornu. The cells are often entirely absent for a considerable area, the space being replaced by connective tissue, or a few shrivelled cells may be found. The neuraglia tissue in the affected area may have lost its characteristic apperance and look like ordinary connective tissue. The lateral columns adjoining are usually smaller, although they may be normal otherwise. The nerve fibers leading from the destroyed portion are represented by fibrous cords. The nerves given off from that part of the cord will have some fibers apparently nor-

mal, others with fatty or granular infiltration, but the majority will be merely connective tissue. The muscles supplied by these nerves may retain a few small normal fibers scattered in a muscle sheath where the connective tissue still remains. Some muscles appear only as fibrous bundles; others normal but small, or may show granular degeneration; or there may be a true hypertrophy. The bones are usually smaller with fewer angles, and much smoother. The brain and coverings of the cord present no lesion usually.

The few cases recorded where death has resulted within a short time after the onset, the pathological changes are of two varieties—inflammatory or hemorrhagic. In a case of Drummond, which died five hours after the onset, "the spinal cord in the cervical region showed undue redness of the anterior cornu. The vessels were distended with blood; also the capillaries, and minute extravisations of blood into the gray substance, swelling of the neuroglial elements, and of ganglion cells, which were granular with indistinct processes." In other cases recorded where the cornu was examined from one to six weeks after the symptoms began, there was always found changes in the anterior cornu; often widespread in slight degree; more marked in special foci, especially in the cervical or lumbar enlargement. At these spots the anterior cornu are softened, sometimes hemorrhagic infiltrations, sometimes actual cavities. The extravisations of blood seem to be massed along the blood vessels. Granular corpuscles and other products of nerve disintegration are found. All nerve elements, and especially motor nerve cells, may have entirely disappeared. Where the inflammation is slightest the nerve elements may be intact, but swollen and granular. The signs of inflammation may have extended to the lateral columns adjacent, and they may show destructive degeneration. The posterior columns are never affected. The region corresponds to the origin of nerves supplying the wasted muscle area. The changes described show a general inflammation. Some authorities have described a parenchymatous inflammation, which only affects the motor cells, never extending to adjacent structures.

SYMPTOMS.

We are so often taught that this disease has a sudden onset—that a child may be walking along and fall paralyzed, or go to bed perfectly well and the following morning find several limbs paralyzed—that we lose sight of the fact that these are rare cases, and not all the way infantile paralysis usually begins. In by far the majority of cases there are marked constitutional symptoms preceding the paralysis, by hours or perhaps days or weeks. The severity of these general symptoms do not seem to depend upon the extent of the ultimate paralysis, and just what the relation is is still obscure. They do not appear to be the result of the inflammatory conditions in the spinal cord, else they would be preceded by paralysis in all cases. The disease generally begins as any acute febrile disturbance. Temperature ranges from 100 to 102 deg. Fahr., or even to 105 deg., headache and prostration. loss of appetite, vomiting or diarrhoea, usually great restlessness, In my limited experience of seven cases I have found restlessness one of the most prominent symptoms, also sleeplessness. In one case especially, the child would not remain in one position five minutes at a time, night or day, for about ten days, during the entire course of the febrile stage. Convulsions are occasionally met with, and other cerebral symptoms, such as diplopia, giddiness, but seldom delirium. In very rare cases symptoms of meningitis are found. Pain is a pretty common symptom in the first stage. Many authorities deny the existence of pain, but in children old enough to complain, and in adults, pain is common, both in the affected limbs and in the back. In the limbs it may follow the nerve trunks, but more generally appears to be in the muscle. Rheumatoid pains in the joints often lead to a diagnosis of articular rheumatism.

I have found sweating a common symptom—profuse sweating, lasting six days in one instance. Tingling and formication may precede the paralysis. Great hyperesthesia is often found, with such marked tenderness in the entire affected parts that the child screams when moved. Paralysis appears early in the disease, and is a constant symptom. The paralysis at first may seem total in the affected limb, but later it will nearly always be found to confine itself to "groups of muscles functionally associated." Some

muscles of the group may show absolute paralysis, while others are only slightly weakened. Between these extremes may be muscles of all degrees of paralysis. While there is always a tendency to functional grouping, this is not absolute; therefore, the paralysis does not conform to any type. It may affect any limb. The legs suffer three times as frequently as the arms; the left leg twice as often as the right; next in frequency both legs; then all four extremities; then one lower and one upper extremity, crossed; and last, one or both upper extremities. In the legs paralysis may be absolute. Generally the muscles below the knee, especially the tibial or peronii most often affected, producing the typical deformity later. If both legs are affected, it is commonly unequally so; hence, asymetry is the result. The calf muscles may be the more affected—producing the opposite deformity. In the thigh the extensors are more generally involved, and in the hip, the flexor. In the arm muscles, the deloid is the most often attacked, and, with it, often the hand muscles, or any other muscle in the arm or forearm. The seratus magnus is frequently involved in the arm type. Any muscle in the trunk or back may be affected. Paralysis is always rapid, sometimes appearing first in the disease. It may first involve one limb and very rapidly spread. At first, the paralysis may be of wide extent, but one or two limbs may completely recover, leaving a comparatively small area of total paralysis. The paralysis is essentially a motor paralysis, sensation rarely being impaired. Reflexes are lost early and complete. After the paralysis has reached its height, and ceases to spread, it usually remains stationary for sometime, and then improvement begins. However, where wasting occurs, wasting remains, and some permanent paralysis always result. By the end of the third or fourth month all the improvement will have taken place which will occur. Generally, after the first week, the paralyzed muscles do not respond at all to the faratic current, and the galvanic is then increased, and the paralyzed muscles give the characteristic degeneration reaction. If there is ever so slight response to faradism there may be hopes of that muscle recovering—at least, regaining some power. After a time, galvanic irritability is also lost in the paralyzed muscles.

As has been hinted, the paralysis is often overlooked at first, and the physician's entire attention is given to the stomach trouble, fever, rheumatoid pains, etc., and possibly a week or more passes before the paralysis is noted. The child often keeps its limbs in unusual positions, but it is not observed until during convalescence, that the child shows no power or desire to move the limb. Very rapid atrophy is often observed. A fat, well-rounded limb may appear soft, flaccid, cold and useless. The skin is often cyanosed and clammy. The blood does not circulate properly on account of the lack of muscular movement.

The resulting deformities vary greatly—from slightly weakened limbs to dwarfed, contracted and useless appendages. The opposing muscles contract in time, and permanent ankylosis may result, or luxations of the joints, due to the relaxation of the tendons and ligaments. The growth of the bones may or may not be retarded.

COURSE AND PROGNOSIS.

The course of the disease is in four stages:

1. The initial stage, accompanied by fever, lasting from a few hours to weeks.

2. The stationary stage, lasting from a few weeks to several months.

3. The stage of recovery of slightly affected parts, and wasting of completely paralyzed parts, lasting from one to six months.

4. The chronic stage, or that of deformity and contraction.

Death is very rare, or it is not diagnosed early in many instances. If very many of the respiratory muscles are involved, bronchial catarrh may produce death. Relapses are exceedingly rare and second attacks unknown.

Subjects of infantile paralysis are said to be more susceptible to the other forms of spinal cord disease, but this is doubted.

PATHOLOGY.

In the case of paralysis coming on suddenly in a child of perfect health, without doubt the lesion is acute hemorrhage. The onset is too sudden to be dependent on inflammatory changes. Another point in favor of this is, those cases show only one focus of trouble. It is a sudden hemorrhage in the course of the motor fibres cutting off either the nerve or glanglion nutritive cell,

causing sudden paralysis, followed by atrophy and death of the tissues supplied by those nerves. In the inflammatory cases there is the slower onset of paralysis, with total paralysis of some nerves and partial paralysis of others, with recovery in still others, where the inflammatory changes have not gone to the destruction of tissue. Destroyed nerve elements do not regenerate, but inflamed tissue may return to normal. Gowers attributes both the inflammatory and the hemorrhagic variety to what he calls a certain "blood state." He looks upon the cause of the disease as being constitutional, with local manifestation in the spinal cord, and in no way regards the spinal cord lesion the cause of the general constitutional disturbance.

DIAGNOSIS.

In the first stage the diagnosis is the most difficult and the most important. It so closely simulates any mild febrile disease that a diagnosis cannot be made till the paralysis appear. Hence, the importance of finding the earliest manifestations of paralysis. Paralysis may be mistaken for prostration. The rheumatoid pains mislead, unless it is carefully noted that the pains are not located in joints, and do not depend on motion, but are spontaneous. The diagnosis of cerebral paralysis is easy, and the electrical reactions are conclusive. The diagnosis from rachitis, scrobutis and hip-jointit disease should not be difficult if the cases are studied. In adults especially, the diagnosis from multiple neuritis is difficult, especially if some neuritis accompanies the anterior poliomrelitis.

TREATMENT

In the initial stage the treatment should be absolute rest and quiet. As there is active inflammation of the spinal cord there is a great possibility that it will spread if motion is allowed. As the child is likely to be restless, mild sedatives should be administered. Hot applications to the spine are advised. Belladonna and ergot have also been advocated with probably little to prove their real value. Electricity should be avoided so long as there is any inflammatory condition—therefore, for at least three or four weeks from the onset. Gentle massage and warmth should be applied several times daily to the affected parts. In this way nutrition of the muscles may be kept up so they will have the

best possible chance of recovery. After the stage of inflammation has passed, the danger of great deformity is reduced by the prevention of contraction of the opposing muscles by means of mechanical appliances. Braces which keep the limbs from contracting for several years will prevent any marked contractions. There is only this advantage to mechanical appliances: that the limb will not be used at all, and that, too, during the very period of life that the greatest development takes place normally. The normal development of the partially paralyzed muscles is in this way hindered. The best mode of treatment, I believe, is to allow free use of the limbs during the day, and have braces worn during the night, for it is during sleep that the greatest danger of marked contraction exists, on account of the easy position the limbs naturally assume. Electricity and massage should be kept up—not for any curative effect, but to merely stimulate nutrition of the partially paralyzed muscles.

Since 1892 much has been done by surgery for the relief of the great deformity and the helplessness of the patients. As the lower extremities are affected more frequently than any other, the patients are more helpless, being unable to walk, especially if the joints are weakened, or there is great contraction. A firm, stiff joint is greatly to be preferred to a very weak one, and a permanent ankylosis is sometimes resorted to. Often the entire group of muscles are not paralyzed, and it is possible to transplant the tendon of the paralyzed muscle with excellent results. Even transplanting it into a healthy antagonist will sometimes make a useful joint. As an example for transplantation, the following is frequently employed: When the entire quadracepts extensor is involved, the sartorius may remain active, and in the hamstring muscles may produce complete permanent flexion of the knee. If the tendon just above the patella is transplanted into the tendon of sartorius, and the sartorius developed to its greatest capacity, it can, by its contraction, materially help extension. Two methods have been used, transplanting the tendon of a paralyzed muscle into a healthy muscle, or cutting the tendon from a healthy muscle and attaching it to a paralyzed one. When transplanting is impracticable, shortening the paralyzed tendon and attaching it to the periosteum of the bone beyond the joint has proven to be beneficial.

Report of the Section on Chemistry and Physiology.

THE URINE.

By F. O. ROGERS, Chairman, Concord, N. C.

The recent advances in our knowledge of physiological chemistry, together with a more extended and refined use of the microscope, have enabled us to pursue a more careful and thorough study of the urine in its relationship to the human body, both in health and in disease. The variations in nutrition and waste are accurately recorded in the urine, hour by hour, and by an intelligent interpretation of our modern methods of urinalysis these physiological actions may now be read with as much precision as we can number the pulsations of the heart. Wherever pathogenic processes seriously disturb metabolism or nutrition the results are recorded in the urine. In order to fully comprehend the relationship of the urine to the organism, under the influence of various pathological conditions, it is first necessary to become acquainted with the physiology of secretion and excretion, as well as the normal constituents of the urine, together with those various changes recorded in the normal urine.

The urinary glands (the kidneys) are very complicated in structure, but when we take into consideration the divers duties of these organs we are not surprised. They remove from the blood all impurities, whether they result from normal or pathological changes. Through them all injurious, useless or superfluous matter is eliminated. Any substance, soluble or insoluble, colloid or crystaloid, alkaline or acid, which tends to alter the normal constituent of the blood, is expelled and eliminated through the urine. We are not yet able to say in what part of the gland this work is done; possibly certain portions of the gland are set apart to perform certain functions.

Fifty years ago Bowman stated, that, judging from the construction of the gland, there are two distinct portions in the

structural activity of the kidney, each one of which plays a different part in the production of urine: (1) the tuft of the vessels to furnish the fluid portion of the urine and soluble salts; (2) the solid matter, urea, etc., is separated by the aid of the glandular epithelium lining, the convoluted portion of the tube. Recent investigations tend to support the theory of Bowman, as stated by him in 1854.

Urine contains no proteid, as we know the proteid molecule, and is incomparably richer in solids and urea than the blood, hence the secretive process is now applied to the glomerulus. At present it is generally conceded that the processes of urinary secretion depend essentially upon a specific activity of the cells of the epithelium of the urinary passages, besides which processes of filtration and diffusion also take part. The afferent artery being larger than the efferent artery, the volume of blood is diminished in the glomerulus, by loss of water and soluble salts, which passes through the vessel walls as a secretion. The process of the secretion of urine in man and the higher animals is generally considered to proceed chiefly as follows: The water together with a small amount of salts, passes through the glomeruli malpighii, while the chief part of the solid is secreted by the epithelium of the urinary passages. A secretion of solids without a simultaneous secretion of water is not possible, and, therefore, a part of the water must be secreted by the epithelium cells of the urinary passages. The passage of water through the glomerulus is rather generally considered to be a filtration due to blood pressure. According to Heidenhain, the thin cell layers of the glomeruli have a secretory action.

The amount and the composition of urine are liable to great variations. The incidents under which physiological conditions exercise a great influence are the following: The blood pressure and the rapidity of the blood current in the glomerulus, the quantity of urinary constituents, especially water in the blood, and, lastly, the condition of the secretory glandular elements. Above all the amount and concentration of the urine depends upon the elimination of water. That this may vary with the amount of water in the blood or with change of circulatory conditions is evident; but, under ordinary circumstances, the amount

of water eliminated by the kidneys depends essentially upon the quantity of water which is brought to them by the blood or which leaves the body by other exits. The elimination of urine is increased by abundant drinking or if the amount of water removed in other ways is lessened. But it is decreased if the amount of water introduced into the body is diminished or there is a great increase in the amount of water removed in other ways. Ordinarily, in man, equally as much water is eliminated by the kidneys as by the skin, lungs, and intestines together. At a low temperature and in a moist air the amount of urine is increased, as under these conditions the amount of water eliminated by the skin is reduced. Diminished introduction of water or diminished secretion of water (as in violent diarrhoea, persistent vomiting or abundant perspiration) greatly decreases the urine. For example: the urine may sink as low as 500 to 400 c.c. per day in intense summer heat, while, after copious draughts of water, the elimination of 3,000 c. c. of urine in twenty-four hours has been observed. The average quantity of urine secreted in the course of twenty-four hours for healthy, grown men is 1,500 c. c. (three pints); for women 1,200 c. c.

The quantity of solids secreted in the course of twenty-four hours is rather constant, even though the quantity of urine may vary, and it is more constant when the manner of living is regular; therefore, the percentage of solids in the urine is naturally in an inverse proportion to the quantity of the urine. The quantity may be calculated with approximate accuracy by means of its specific gravity. If the second and third decimals of the specified gravity be multiplied with Haser's coefficient 2.33, the product gives the amount of solids in a thousand c. c. of urine, and if the quantity of urine eliminated in twenty-four hours be measured the quantity of solids in twenty-four hours may be easily calculated. The amount of solids given will be in grammes.

As above stated, the percentage of solids in the urine generally decreases with a great elimination and an abundant secretion (Polyuria) has, therefore, as a rule, a lower specific gravity. An important exception to this rule is observed in the urine containing grape sugar (Diabetes Milletus) in which there is an abundant secretion and a very high specific gravity. An abnormal

specific gravity is a fact of great importance in disease; a considerable departure in the normal implies one or two things: either tissue changes are notably suspended and their products formed in smaller quantities, or, these processes remaining active, such products fail to be removed from the kidneys.

The color of the urine is due to certain normal pigments from the blood which have not yet been separated.

Garrod has lately, by a new process, isolated from the urine a substance to which he believes the color is entirely, or almost entirely, due. He believes this to be a definite chemical body, and distinct from the urinary products, such as (1) urobilim, which is an outcome of the biliary pigments, and, therefore, a derivative of the coloring matter of the blood; (2) hæmatoporphyrin, which is present in the normal urine in very small traces.

The color is normally pale yellow when the specific gravity is normal. Otherwise the color depends on the concentration of the urine, and varies from a pale straw yellow, when the urine contains small amounts of solid, to dark reddish yellow or reddish brown in stronger concentration. As a rule, the intensity of the color corresponds to the concentration, but under pathological conditions exceptions occur and such exception is found in diabetic urine which contains a large amount of solids and has a high specific gravity and a pale color.

The reaction of the urine depends essentially upon composition of the food ingested. The urine of a healthy man has an acid reaction. This acidity is not due to free acid, but to the acid salts which the urine contains. This reaction varies at different periods and is modified by diet (as above stated). The acidity is generally less in the forenoon, and at times in the healthy human may exhibit an alkaline reaction. After the ingestion of an ample meal or alkalies or the salts of acetic, tartaric or citric acid the reaction may be alkaline. Healthy urine when allowed to stand for sometime becomes at first more acid from an increase of acid phosphates as well as lactic and acetic acid and then it becomes alkaline in consequence of the reaction of a micro-organism. The micrococcus urea which decomposes the contained urea into amonium carbonate. In the different morbid states the urine may be acid or alkaline. It occasionally happens that the

urine is amphoteric. This depends upon the presence of acid or neutral phosphates.

The percentage of the solid and liquid materials varies much, but on an average the urine may be said to contain about four per cent. solids and ninety-six per cent. liquids. Of the solid the most essential and by far the more abundant is urea. It forms on an average about two per cent. of the urine. It is regarded as the chief end product of the oxidation of the nitrogenous matter in the body, so that the amount of urea eliminated per day gives an estimate of the nitrogenous metabolism. Urea is found under normal condition in the urine, the lymph, the chyle, the blood, the sweat, the viteous, humor, and a trace in the saliva. Its presence has been demonstrated also in the substance of the healthy liver in both carnivorous and herbivorous animals. Under pathological conditions urea finds its way into various other fluids, such as secretion from the stomach, the serous fluids and various other fluids of the body. It is one of the few organic substances that has been produced artificially. In 1828 Wohler obtained urea by adding ammonium sulphate to a solution of potassium cyanate; the products of this combination are potassium sulphate with cyanic acid and ammonia in a form to constitute urea. The origin of urea was for years a disputed question, but it is now admitted by eminent physiologist to be in the blood and not in the kidneys. It finds its way into the blood from the tissues and from the lymph, which contains a greater proportion of urea than is formed in the blood. As an outcome of many contradictory experiments and opinions on the subject it must be admitted that the liver produces urea in large quantities. Cyon, in 1870, first made the observation and it has repeatedly been confirmed. In certain cases of structural diseases of the liver the excretion of the urea is much diminished. In fever and diabetes milletus there is an increase in the amount of urea. Any variation in the amount of urea eliminated is an expression of changes in the nitrogenous metabolism, and as such is of the highest clinical interest. In the healthy man the quantity of urea which is voided in twenty-four hours, on a mixed diet, is about thirty grammes. In a healthy woman somewhat less. Children void absolutely less, but in proportion to their bodily weight

the excretion is greater than in adults. The physiological significance of urea lies in the fact that this body forms in man and carnivora from a quantative standpoint the most important nitrogenous end product of the metabolism or proteid bodies. On this account the elimination of urea varies to a great extent with the amount of proteid transformed and above all with the quantity of absorbable proteids in the food ingested. The elimination of urea is greatest after an exclusive meat diet, and lowest after the consumption of bodies free from nitrogen; it is less in such a case than after starvation, for food free from nitrogen diminishes metabolization of the proteid of the body. If the consumption of the body is increased then the elimination of urea is correspondingly increased. This is found to a rather high degree in certain diseases with fever also, though to a less extent after taking common salt or after abundant drinking of water. A diminished elimination of urea occurs in a reduced consumption of proteids and also in certain diseases of the liver as yellow atrophy and in some cases of chronic interstitial nephritis. In diseases of the kidneys which destroy or disturb the integrity of the epithelium of the uriniferous tubles the elimination of urea is greatly diminished.

Uric acid, which should be considered next, is found in very small quantities in the urine of malaria, but in birds and insects its salts form the chief ingredient. The amount of uric acid eliminated with human urine is subject to considerable variation, but amounts on an average to 0.7 grammes during twenty-four hours provided the diet is a mixed one. On a vegetable diet the amount is less but may rise to two grammes on an abundant meat diet. The relationship of uric acic to urea is one to fifty to one to seventy. In new-born infants and in the first days of life the elimination of uric acid is increased and the relation between uric acid and urea is about one to thirteen to one to fourteen. Experiments show that uric acid when introduced into a dog is in great part converted into urea, and as urea is also formed by the action of oxidizing agents on uric acid outside of the body, uric acid has often been considered as a step toward the formation of urea in the organism. With regard to the pathological relations, we really only know of two conditions in which the

elimination of uric acid is increased, namely, in fever and leuchemia. The elimination of uric acid may be diminished in gout shortly before and during the attack, because in such cases the uric acid is retained in the body. After the administration of quinine, caffeine and certain other medicines the elimination of uric acid is decreased.

Hippuric acid occurs in small quantities in the normal human urine, but in the terbivora it is one of the most important nitrogenous constituents; here it takes the place of uric acid. Its presence depends on the existence of certain ingredients in the food containing benzoic acid. Benzoic acid and also the substituted benzoic acids are converted into hippuric acid and substituted hippuric acids within the body, therefore the question of the origin of hippuric acid is connected with the question of the origin of benzoic acid.

Oxalic acid is not a constant constituent of the urine; it occurs often but not constantly, and it is generally united with lime, making the oxalate of the lime found in the urine. Oxalic acid is said to appear in greater quantity, together with an excess of uric acid, after meals and, therefore, to be related to a production of the latter in the body, but it probably is chiefly derived from oxalates being contained in some materials taken in with the food. Oxalic acid, when administered, is eliminated by the urine unchanged, and, as many vegetables and fruits, as cabbage, spinach, asparagus, grapes, apples, etc., contain oxalic acid, it is probable that the oxalic acid of the urine originates from the food.

Indican, also called indoxyl-sulphuric acid, occurs in alkali salts in the urine. This compound is the mother substance of the greater part of the indigo of the urine. It is derived from indol, which is first oxidized in the body into indoxyl and then is coupled with sulphuric acid. Indol is formed by the putrefaction of proteids and it is, therefore, easy to understand why the quantity of indican is greater in people subsisting on a meat diet than on a vegetable diet. The putrefaction of secretions, rich in albumin, in the intestine explain also the occurrence of indican in the urine during starvation. Any disease causing an obstruction of the small intestine causes an increased putrefaction, thus

producing an abundant formation of indol. A simple obstruction to the larger intestine does not increase the amount of indican in the urine, but if the obstruction causes a marked disturbance in the motion of the contents of the upper ileum there will be an increased elimination of indican.

Sulphuric acid is present in the urine, both as simple sulphuric acid and as æther-sulphuric acid. The combination of the latter have already been spoken of. The total quantity of sulphuric acid excreted in twenty-four hours by a healthy adult, under ordinary conditions of diet, is about two grammes, of which 0.1 gramme is in the form of æther-sulphuric acid compounds. But little clinical significance is attached to a general increase or decrease in the amount of sulphuric acid eliminated.

Phosphoric acid of the urine is combined partly with sodium, potassium, and ammonium and partly with lime and magnesia. Being a tri-basic acid it forms three classes of salts: acid, neutral and basic. Of these the acid phosphates of alkalies and alkaline earths and the neutral and basic phosphates of the alkalies are soluble in the urinary fluid. The neutral phosphate of the alkaline earths are but little soluble therein and their basic phosphates still less so. Two or three grammes of phosporic acid are excreted in twenty-four hours.

Albumin, which, together with the presence of urinary casts, is of much value to the clinician. It is found in the urine of apparently healthy people, and is often called transitory albuminuria, but these traces of albumin are considered by a great many investigators the first symptoms of a diseased condition of the urinary apparatus or as symptoms of a transitory disturbance in the circulation. It is still an open question whether albumin ever occurs in any considerable quantity in the urine of health. Recent investigators have shown that the albumin present in the healthy urine is nucleo-albumin, and inasmuch as every urine holds this substance, albumin in this sense is a normal constituent. Aside from that form of albuminuria, which is at once the commoner and more serious, in which there is some disturbance of the renal function, there is a form of albuminuria, brought on by a long continued febrile condition, which is competent to induce structural alteration in the renal epithelium. This form is usually

transitory. Also in enaemic and enfeebled individuals independently of kidney disease, disordered circulation, or febrile condition, there occurs albumin in variable quantities, which can be accounted for only by assuming changes in the constituents of the blood, of such a character that, whilst the structure of the kidney remains intact, and the blood pressure is not appreciably altered, albumin is allowed to exude with the urine. At times albumin may come from the renal pelvis, the ureters, the bladder, or the urethra, or through any abnormal communication from neighboring parts. And a positive judgment of its source may be formed from the result of both a chemical and microscopical examination. The migration of leucocytes in some parts of the urinary passage just mentioned may often give rise to a chemical reaction of albumin, and only with the aid of a microscope, where you find an absence of renal cast, can you exclude the possibility of renal albuminuria.

Of the carbo-hydrates, which are found in the urine, by far the most important is glucose. The normal urine contains a trace of glucose. The proportion to be found in health is so small that it may be neglected as a disturbing factor, even in the most sensitive tests. Wherever the ingestion of sugar exceeds 150 to 200 grammes in twenty-four hours sugar appears in the urine. The presence of sugar is called glycosuria. Glycosuria never occurs without hyperglycaemia; in other words, the sugar circulating in the blood must be increased considerably above the normal before the kidneys secrete it. Hyperglycaemia may be due to an increased formation or assimilation of sugar or to a decreased destruction, or to both. In order to understand the pathology of a disease, it is necessary to know something of the function or activities of the organ, the perversion of which the disease represents. It is the normal katabolism of sugar which is the perverted function in diabetes. The sugar with which we are here dealing is glucose ($C_6 H_{12} O_6$), called also grape sugar; it is one of the simple sugars. The sugar is generally taken into the body as cane sugar ($C_{12} H_{22} O_{11}$), and by a process of hydrolysis (the taking up of the one molecule of water) is converted into two molecules of simple sugar $(C_6 H_{12} O_6)_2$. Immaterial of what the source of sugar is, whether from the food or from the

fat or proteid of the body, it is finally oxidized into the CO_2 and HO_2 and as such is eliminated from the body. In the fermentative destruction of the sugar molecule by certain bacteria and other organized and unorganized ferments; as a preliminary step the sugar molecule is split into a simplex substance like alcohol or lactic acid that have a greater affinity for oxygen than sugar has; even now some oxygen carrier must be brought into play in order to cause the union of these bodies with oxygen in the body. This sugar splitting ferment, which is found in the body, in the blood (the white cells), lymph and muscles, is probably trypsin.

Croftan found that a watery extract of liver pulp always contained considerable quantities of trypsin, thinking possibly this may have to do with the formation of the bile pigment from hæmoglobin, a few drops of trypsin solution (with all due care for antisepsis) were added to a dilute sulution of hæmoglobin containing a small quantity of dextrose or glycogen, and the mixture kept at room temperature for a week. At the end of this time the hæmoglobin was found to be destroyed, the liquid colorless and contained in bile acids, while bile pigment was found in the sediment. At the same time if trypsin was simply added to the dilute solution of hæmoglobin alone, the destruction of hæmoglobin occurred very differently, i. e., neither bile acids or bile pigments were formed. The sugar played an important part in this conversion. Determination of the sugar both before and after showed that a considerable quantity of the sugar had been destroyed in this process, in other words, trypsin in the presence of hæmoglobin possesses sugar spliting powers.

Properties of trypsin all are familiar with. It digests proteids in alkaline solution.

(2) In contact with certain coagulable solutions it causes coagulation.

(3) Injected in the veins of an animal it causes widespread congestion and death of the animal by formation of thromboses.

(4) It is precipitated by dilute acetic acid.

(5) It is coagulated by absolute alcohol, but it is again soluble in water or a physiological salt solution even after remaining many weeks in contact with alcohol.

(6) Finally it is capable of decomposing hæmoglobin, forming

bile pigment and bile acid only, however, in the presence of dextrose or glycogen, at the same time destroying the sugar. An intererference with this glycolytic function then must lead to hyper-glycaemia and glycosuria; therefore we may safely state that at least one cause of the diabetes milletus is reduction in the sugar splitting process. As to the causes of this perversion of function we do not know, but recent investigations have stimulated us to regard the pancreas as a very important organ in studying the etiology and pathology of diabetes milletus. Seeing the important part played by trypsin in the destruction of sugar, causes the classification of trypsin, under certain conditions, as also one of the glycolytic ferments; therefore it is not strange that removal of the pancreas should cause accumulation of sugar in the blood and its presence in the urine. If trypsin is absent hæmoglobin destruction occurs along abnormal lines and no sugar is destroyed. It therefore accumulates. In addition the products of this abnormal katabolism is harmful and circulating in the blood produces many of the symptoms of diabetes milletus. They are protoplasmic poisons, certain albumoses.

Up to this time we are not justified in assuming pancreatic disease in all cases of diabetes, but that some analogy exists in certain cases seems evident. Recent experiments have likewise shown that painting the pancreas with a solution of adrenal gland extract would cause glycosuria and likewise certain inorganic chemical substance as weak mineral acid would produce a similar result.

It is useless to speak of the various chemical tests used for the detection of sugar in the urine, but the most reliable is the fermentative test. Fehling's test is not so reliable, as certain conditions cause the reduction of copper from the cupric to the cuprous condition in alkaline solutions. This condition is called alcaptonuria and is due to the presence of alcapton in the urine.

Transient glycosuria is a common occurrence of no gravity, but having found it in the urine it would be well for the physician to test the urine from time to time, making sure that it is only a transient condition, and do not brand a case as diabetic

after only a hurried examination; but the continual presence of sugar in the urine over a long period of time makes the positive diagnosis of diabetes milletus.

DISCUSSION.

Dr. Kirby: The recent investigations of the pathology of the pancreas undoubtedly show that there is a certain relation between some cases of diabetes and disease of the pancreas. In line with Dr. Royster's paper it might be suggested that trypsin, one of the ferments of the pancreatic juice, be administered in cases of diabetes as it has been shown that trypsin in the presence of hemaglobin and glucose causes the formation of bileacids and pigment.

Report of the Section on Pathology and Microscopy.

RETENTION OF URINE.

By A. J. CROWELL, Chairman, Charlotte, N. C.

Mr. President and Gentlemen:

As Chairman of the Section of Pathology and Bacteriology, I should give you a report of recent investigations in these branches, but on account of circumstances, over which I had no control, I have been unable to do this. Therefore, rather than to fail to prepare a paper at all, I decided to get up a practical one on a trouble with which every general practitioner, as well as the specialist, is constantly confronted.

RETENTION OF URINE.

Retention of urine is the inability to empty the bladder.

This is a trouble of frequent occurrence, often overlooked, and far-reaching in its results, as I shall endeavor to show you later, and usually very poorly treated.

The wonderful powers the kidneys have to take from the circulation, and eliminate from the body toxic substances, which, if allowed to remain in the circulation, would soon destroy life, makes this organ one of vital importance. Anything interfering with the excretion materially hinders the secretion of urine.

Retention of urine is due to atony, paralysis of the detrusor muscles, spasm of the sphincters—usually reflexly—and obstruction at the neck of the bladder or in the uretha. Whatever interferes with the vesicle centre in the spinal cord, such as locomotor ataxia, Pott's disease, general paralysis, sclerosis or cerebro-spinal injuries, causes paralytic retention. The muscles may be directly paralyzed by inflammation, extending from the mucous coat or peritoneal investment (due to peritonitis) over distention or degeneration of muscular fibres, caused by prolonged or exhausting diseases.

Spasmodic retention may follow shock or injury, operation on

the spermadic cord, rectum, testicles, or prolonged voluntary retention, hence the importance of watching the bladder and using catheter for a few days following such operations. Obstruction may be due to tumor, impacted stone, clot, foreign body, prostatic hypertrophy or inflammation. Retention may be of sudden or gradual onset, and may be partial or complete.

Sudden and complete retention is seen in cases of rupture of the urethra, impacted stone or reflexly following operations, etc. In these cases the symptoms are so plain that a diagnosis is easy. These symptoms are: steadily increasing pain, a constant desire to urinate with recurring and unavailing efforts, tenderness over the bladder, with tumor, dull on percussion, globular in shape, and often extending up to the umbilicus. Rectal and supra-pubic palpation shows the presence of a fluctuating tumor in the region of the bladder.

Gradual retention may develop so insidiously that it is not detected until direct examination shows the presence of a distended bladder. This form of retention is due to urethral stricture, atrophy of the detrusor muscles, lesions of the cord, intra and extra, cystic bladder growths, or inflammation and enlargement of the prostate gland.

Since the bladder is always partially filled with residual urine, the first symptom noticed is frequent urination with but little force, which diminishes toward the end of urination, and usually with much diminished volume.

Even if the vesicle muscles are healthy, the flow of urine is so obstructed that the time required to empty the bladder is so long that the voluntary detrusor muscles become tired and relax before the bladder is entirely emptied and leave a certain amount of the urine in the bladder. The residual urine is proportionate in quantity to the degree of obstruction encountered in the urethra, vesicle neck and to the loss of tone of bladder muscles. When sterile and moderate in amount, the only symptom it causes is frequent urination. The cause of this is obvious. The bladder can retain comfortably only about ten onuces of urine, and if five ounces are left in the bladder after each urination, the kidneys will have to secrete only five more ounces until the bladder will have to be emptied again.

Because of the unrest and irritation of frequent micturition, with more or less sustained tension, when the residual urine exceeds from four to six ounces, chronic congestion is the result. This is often greatly augmented by cystitis and fermentation of the stagnant urine.

As the obstruction increases and the muscles become atonic or atrophic, from whatever cause, the bladder is more and more distended until it becomes enormously dilated. When this gradual retention occurs in the course of fevers, it is due to degeneration of the detrusor muscles and to abolition of the normal reflexes. The sphincter muscles give way as the bladder distends and this is followed by incontinence. Incontinence of urine should always lead to examination for an over distended bladder. Whether the retention is complete or incomplete the intro-vesical tension is abnormal and far-reaching in its results.

EFFECTS OF RETENTION.

As previously stated it has been shown experimentally that even a moderate amount of residual urine, say three or four ounces, causes distinct vesicle congestion, which if not relieved will be followed by bloody extravisation, involving often the whole thickness of the bladder wall, and pronounced epithelial desquamation. This pathological condition is not confined to the bladder, but extends into the ureters, kidney, pelves and tubes of the kidney. Ecchymosis in the parinchymatous portion of the kidneys is often very marked.

When the detrusor muscles are paralyzed, the bladder remains absolutely flacid, even though the urine be drawn. The desquamation of the epithelium from the bladder, ureters and kidneys, which, when unbroken, prevents absorption from the genito-urinary tract, exposes the lymph and blood channels, and allows the absorption of toxic substances, and when the bladder is infected, rapidly extends up into the ureters and kidney pelves, and instead of a simple retention, you have to contend with pyelonephritis. It is not until acute retention has lasted more than twenty-four hours that the bladder, prostrate ureters and kidneys, are enormously congested. At first the kidneys are excited to increased activity, and as the pressure increases, secrete slowly

or not at all. In such a condition you can readily see that the whole urinary tract is ripe for infection; absorption takes place readily and the normal excretion of toxines is inhabited.

Chronic retention, which of course is incomplete, produces pathological alternations of less immediate danger than those of acute retention. When the retention is moderate, the changes are limited to the bladder, but if it is as much as six ounces, there is chronic congestion of the entire urinary apparatus, with pronounced susceptibility to infection. Fever, if present, is usually due to infection, and temperature is normal or sub-normal in both acute and chronic retention. There is more immediate danger in acute than chronic retention, but the ultimate results are the same.

Relief of tension, in both acute and chronic retention, is called for as soon as possible, and should be done with the utmost antiseptic precaution. Sudden evacuation of the bladder, in cases of chronic retention, often causes hemorrhage from the bladder and kidneys as well as into the substance of these organs. This is less liable to occur in acute than in chronic retention. It is due to sudden relief of pressure to which the engrorged vessels have long been accustomed; and because of this fact the bladder should not be emptied entirely at first, but be replaced by a normal salt solution, and the amout of fluid in the bladder should be gradually reduced until it can be entirely removed. The evacuation of the bladder often so completely relieves congestion that the power of micturition is restored; and especially is this so in acute retention, but usually catheterization must be continued for some time, and as often as necessary; this depending on the activity of of the kidneys and the amount of residual urine, not allowing more than ten to twelve ounces to accumulate before being drawn.

PROSTATIC RETENTION.

From an etiological standpoint, White and Martin classify retention of urine as follows:

1. Retention due to paresis or incordination of the bladder muscles.

2. Retention from congestion or acute inflammation.

3. Retention due to blocking of the urethra by clots, foreign body, stone or portions of new growths.

4. Retention caused by prostatic enlargement.

5. Retention caused by stricture.

6. Retention due to traumatism.

For want of time I shall briefly call your special attention to only three of the six general causes.

1. Retention due to paresis or incordination of bladder muscles

This form of retention is due to failure of the detrusor muscles or loss of control over the sphincters, and is common in cerebral and spinal cord injury or disease, shock, hysteria, peritonitis, exhausting diseases, voluntary retention, paravesical inflammation and following operations on the rectum and spermatic cord. The symptoms and diagnosis of retention have been referred to above, and I shall say here only that when retention develops without apparent cause, and with no previous history of urethral or bladder trouble, close search should be made for ataxia. In every case of retention careful examination should be made for stricture and enlarged prostate regardless of the history obtained.

TREATMENT.

Retention caused by hysteria is usually relieved by hot enemata, followed by hot sits baths; the patient being instructed to pass the injection while still in the bath. This treatment is usually efficient in anal operations, inflammation, shock and voluntary retention, but usually the catheter should be used for retention following anal operations, and always for that due to any of the above causes if relief is not obtained from the use of the hot enemata and bath, and not trust to medicines.

When a catheter is to be used the same care should be exercised by the surgeon as if he was going to perform a major operation, since the intense congestion of the bladder and proliferation of epithelial cells make the bladder and kidneys very susceptible to infection. The surgeon's hands should be thoroughly cleansed, the patient prepared as if for a major operation, penis down thorough a slit in a sterile towel, urethra irrigated with a mild antiseptic solution; then a No. 16 F. rubber catheter is lubricated with sterile oil and passed into the blad-

der, and if the retention is acute and of short duration all the urine may be withdrawn, but if chronic not more than eight or ten ounces at most should be drawn off. Then the bladder should be irrigated with a normal salt solution by putting into and withdrawing from the bladder a certain amount of this solution, say from four to six ouuces, and in this way displace the remaining residual urine with the normal salt solution. Boracic acid is better if cystitis is marked.

If the bladder is suddenly emptied, and especially if there is infection, severe hemmorrhage, involving the kidneys and their pelves, is liable to occur, causing partial or complete suppression of urine and death. When retention is due to central nervous lesions, as in ataxia, Pott's disease, or to muscular degeneration, as in typoid fever or arterio-schlerois, regular and frequent catheterization is indicated. Because of the hyper-secretion of the kidneys from the undue pressure to which they are accustomed, it may be necessary to catheterize from four to six times in twenty-four hours. The bowels should be regulated by enemata or salts. In all these cases urinary antiseptics, such as salol, urotropin and cystigen should be given by the mouth, and strict attention paid to hygiene and diet.

2. Retention of urine from stricture.

This cause must be distinguished from that of enlarged prostate, since the treatment of the two differ greatly. In both cases we have frequent urination, with slowness in starting the stream. The urine flows easily and with little delay during the day in prostitis, but at night and early morning with less ease and more frequency. Rectal examination usually shows enlarged prostate, when due to prostitis. Frequency is most pronounced during the day in stricture; less delay in starting the stream and usually more dribbling. There is distinct remission of symptoms at night until retention is well advanced. Congestion, produced by excess in drink, sexual indulgence, chilling of the surface, passage of a catheter or sound, may cause retention at any time. It may develop from same cause in case of stricture of large calibre, without preceding history of frequent urination. The bladder is usually hypertrophied, and when there is only a small amouut of

residual urine, on account of the undue tension, the surgeon is generally called early.

DIAGNOSIS.

The diagnosis is founded upon the exploration of the urethra with acorn bougies, introducing first the largest the meatus will admit, and gradually reduce the size until you pass the obstruction and thus locate the strictures and ascertain their calibre.

TREATMENT.

Spasm and congestion being the principal cause of acute retention from stricture, the hot bath, hot enemata, opium and belladona suppositories are often found sufficient. Should these fail, you should promptly catheterize. A number 18 or 20 French sound may be introduced into the bladder. If this fails, fine conical and rattail soft catheters should be tried next. If these fail, filiform bougies should be used; gently manipulating until one enters the bladder, and if only one can be introduced it may be tied, with the full assurance that enough urine will leak out to relieve tension, and that the stricture will be sufficiently softened in a short time to admit a larger instrument and the urethra gradually dilated. If all these fail, then aspiration is indicated, followed by perineal section and cutting or forcibly dilating the stricture.

3. That due to prostatic hypertrophy.

It is strange, that, until half a dozen years ago, a disease occurring in from 22 to 30 per cent. of all males past middle life, and capable of producing so much suffering and so great mortality, has received so little attention at the hands of the medical profession. It has been recognized since the days of Hippocrates, and the same chain of symptoms given, but with no past treatment save the catheter. During the half a dozen years the profession has awakened to the great necessity of a better form of treatment; one that would promise the sufferer more than the average of four years, which statistics show to be the average length of life of an individual after the prostate so obstructs the outlet as to require the use of the catheter.

Of all the forms of urinary retention, that due to prostatic hypertrophy is the most frequent; and in order to discuss the

treatment intelligently, it will be necessary to look into the etiology and pathology of prostatic hypertrophy somewhat closely. These are not as well understood to-day, it seems, as might be; but with the present light before us, as the result of the untiring energy and research made during the last six years by Motz, Albarron, Guyon, Harrison, Ciencanowski, Green, Brooks, Hugh H. Young, and others, may we not justly look forward with hope and expectancy to that day in our generation when those near and dear to us, bowed by years of toil and care, may be enabled to lie down and sleep calmly and peacefully as a little child, so far as prostatic annoyance is concerned, and thus make that period of life, so much dreaded to-day by the aged, free from the suffering and ill health produced by prostatic hypertrophy?

This gland is composed of thirty or forty compound recemose glands imbedded in an abundant stroma of connective tissue and broad, short cells with avoid neuclei. These muscle fibres are so arranged as not to act as sphincter or accelerator urinea.

Green and Brooks, reported in "The Journal of the American Medical Association," which came out April 26th, the results of 58 cases microscopically examined by them, with the view of determining the most frequent cause of prostatic hypertrophy—which I would advise of each of you to read carefully—with the following results:

1. They found abundant evidences of inflammation in every gland.

2. The same gland often showed several different types of inflammation, though the most common one was interstitial hyperplasia, followed by atrophy of the muscle cells of the gland.

In 41 of these cases the increase in size was chiefly or entirely due to fibrous proliferation, but in 36 cases inflammation played a leading role, and in 19 cases cystic distention of the aveoli was present in sufficient degree to increase the size. In six, tumors were present; three, fibromy from the interstitial tissue, and three from the epithelium-epithelioma. No cases of true glandular or muscular hypertrophy were present.

As stated above, insterstitial hyperplasia is the most frequent

cause of hypertrophy, and this is recognized generally as being produced by inflammation. In all organs, acute and sub-acute inflammation gives rise to hyperplasia, and especially is this so in the prostate gland, as it is an organ abundantly supplied with blood vessels and highly cellular connective tissue.

With the cessation of acute inflammation, following a removal of its cause, interstitial hyperplasia should cease and retraction and atrophy follow from the schlerosis of the fibres. Such is the result in favorable cases of prostatitis in the young, and we have as a result the atrophic or small hard prostate. In the middle aged or old man, where we have more or less arterial schlerosis, resolution and healing do not take place so readily, and instead of cessation of connective tissue hyperplasia, the condition becomes chronic, the blood vessel and lymphatic walls are thickened, the gland is congested, edematous, with proliferation of epithelial cells and continued hyperplasia. As the result of overgrowth alone, when continued for a long time, we have prostatic hypertrophy. If the fibrosis be marked in the periperal portions of the gland the walls of the alveoli are encroached upon, thickened and obliterated. If hyperplasia is most marked in the central portion of the gland, we have occlusion of the ducts. The glandular epithelium continuing to secrete, distention of the acini and alveoli takes place, hence the familiar cystic adenoma of the prostate.

Surgeons and pathologists admit that such conditions predispose toward cancer of the mammary gland, then why not expect the same thing in the prostate gland, where you have chronic interstitial proliferation compressing and irritating the alveolar epithelium?

The conclusion reached by Green and Brooks in the study of their 58 cases was that most frequently prostatitis is due to posterior urethritis, and posterior urethritis is usually, primarily or secondarily, of gonococcic origin; and that the prostatic hypertrophy is a direct result of chronic prostatitis. Then by the same chain of evidence we are forced to the conclusion that it follows posterior urethritis from whatever cause.

They briefly sum up their conclusions as follows:

1. "Prostatic hypertrophy in the aged is the result of chronic prostatitis.

2. "It most frequently arises from chronic posterior urethritis, of whatever cause.

3. "True neoplasms of the prostate are rare and are not concerned in the production of prostatic hypertrophy.

4. "Carcinoma is apt to occur in the hypertrophied prostate as a result of the chronic inflammatory process."

SYMPTOMS.

In prostatic enlargement as the growth increases, elevating the vesicle orifice, there is partial retention, a certain amount of urine is left in the bladder after each micturition, which, if sterile and does not exceed four to six ounces, causes no symptoms save increased frequency of urination and the habit of rising once or twice in the early morning to empty the bladder. As the obstruction increases the amount of residual urine increases, the desire to urinate more frequent and more urgent, with slowness in starting the stream, and especially at night, and the stream is projected with less force. Finally the walls of the bladder give way to the increased tension and the viscus becomes greatly dilated. If the retention is sufficient to distend the bladder and dilate the ureters and kidney pelves, we have albumen, epithelium, blood, pus, and tube casts in the urine and especially is this the case when we have infection. This dilitation, of course, involves the ureters and kidney pelves. The secretion of the kidneys is interferred with and uremia develops, characterized by gastro-intestinal disorders, and finally death ensues. When distension is great, we have constant dribbling of urine. Should infection take place and cystitis intervene, the vesicle symptoms are very much augmented. Pain and tenesmus are then added to the frequent micturition. If the enlarged prostate becomes suddenly congested in the course of incomplete retention from infection, exposure to cold, sexual excesses, or from whatever cause, there will be acute retention with the usual symptoms of acute retention which are referred to above. [Occasionally we have seen perineal pain, or pain just back of meatus, and especially is this so in acute prostatitis. It is seen in men past middle life. There

is a history of frequent urination with night rising to empty the bladder.] Rectal examination shows an enlarged prostate.

On passing the catheter the urethra is found to be abnormally long. This should be about eight inches and is measured by passing a catheter in till the urine begins to flow, then withdraw and get the length of catheter from the meatus of penis to the eye of the catheter. A full bladder may be recognized and certainly so if retention is marked. The withdrawal by catheter of residual urine immediately after micturition with the above symptoms is sufficient for a diagnosis of prostatic enlargement; but if further evidence is desired the use of the cystoscope will reveal the exact condition of the gland. The cystoscope should always be used before doing any operation on the prostate gland, and especially so before doing the Bottoni operation, in order to get a mental picture of the vesicle portion of the gland, determine the number of incisions to make and their location.

TREATMENT.

Posterior urethretis and prostatitis, being the most frequent cause of prostatic hypertrophy, should not be allowed to become chronic, and thereby eliminate the greatest cause of prostatic hypertrophy. The means devised for the retention of urine due to prostatic hypertrophy, are: First, those measures which tend to reduce prostatic inflammation and consequent cystitis, such as massaging the gland, electricity, deep instillations, irrigating the bladder with antiseptic and astringent solutions. Second, the drainage method or catheterization. This may be continuous or at regular intervals, preventing the accumulation of residual urine; irrigate the bladder with various solutions and in this way relieve prostatic congestion.

Both of these methods are objectionable, as they promise no cure, but only relieve the symptoms of cystitis. Catheterization, however, does prolong life and make it more tolerable for the patient. Perineal and suprapubic drainage may be classed with the drainage method of treatment but affords no more permanent relief.

Castration has been tried and in some cases proved to be profitable, but has been abandoned by its former most earnest advocates.

The Bottini operation in selected cases of obstruction may give the desired relief, yet this is an operation in the dark and in a septic field. It is advisable only in well selected cases.

There is danger in the operation as well as from septic absorption.

Furthermore, the results are not as good as we would like to have. Statistics show about fifteen per cent. failures, thirty-four per cent. partial failures and about seven per cent. death rate in the hands of our most skillful operators. The work done at present is probably much better than formerly, and I believe with Dr. Young's modification of the Bottini instrument, we will have a much greater per cent. of cures than ever before. Instead of one, he has three blades of different lengths, in order that the length of the incision may be made in accordance with the size of the prostate. Often the small, hard prostate gives a great deal of trouble, and a very small incision is sufficient for a cure.

The next operation I wish to speak of for the cure of this form of retention is prostatectomy, both supra-pubic and perineal. Of course the operation is a very extensive one, and in extreme cases careful choice should be made between a radical and a paliative operation. This is the most sensible operation, it seems to me, as it removes the entire seat of the trouble; assuring us that if the patient recovers from the operation he will have no further trouble from this disease.

The procreative powers are destroyed by this operation, and in some of these cases the sexual powers as well. This fact has great bearing upon the choice of operation in early life and should have due consideration by both patient and surgeon.

The greatest objection to the supra-pubic operation is that the prostate gland lies below the wall of the bladder, and to remove the gland by this route it is necessary to destroy a part of the base of the bladder or entire prostatic urethra. In this operation there is great danger of injuring the ureters and especially so when the prostate has grown into the bladder. If the patient has thick abdominal walls or a contracted and thick bladder wall, it is almost impossible to bring the field of operation within view, and the operator is forced to tear out by means of biting forceps and the fingers, parts of the base of the bladder and

gland without knowing how much damage he is doing to the internal sphincter or ureters. This is the operation of choice, however, when you have enlarged prostate with stone in the bladder, and especially if you have pedunculated prostatic growths into the bladder, which is often the case.

Perineal prostatectomy, it seems to me, is an operation founded upon sound principles. It is sound anitomically, because the posterior portion of the prostatic urethra is removed, thus allowing easy access to the new growth. The base of the bladder and internal sphincters are not injured, free drainage is secured, and the capsule of the gland is left, to which the principal supports of the bladder are attached. Septic cystitis is not at all likely to occur, and if present is soon relieved, because of the establishment of free drainage. If great care is taken not to destroy the internal sphincters, the danger of evacuating the bladder suddenly, with its ill consequences, may be overcome to a certain extent.

It seems to me that this is the most scientific operative procedure for the cure of retention of urine, due to prostatic hypertrophy, and one destined to accomplish much for the relief of the ills caused by this complication of retention. For a description of these diffetent operations I refer you to your text-books.

DISCUSSION.

Dr. Sikes: . I do not desire to discuss the paper, but want to return my sincere thanks to Dr. Crowell for his most excellent presentation of this subject, which is of great practical importance to every practitioner.

MALARIAL INFECTION.

E. G. GOODMAN, M. D., El Paso, N. C.

In recent years there have been but few subjects in medical nomenclature so prominently before the profession as the subject of malaria.

The interest centering in this subject has been due to the discovery of the extracorporeal existence of hæmamœbæ in certain kinds of mosquitoes, and the manner of interchange of the parasite between the intermediate and determinate hosts.

It would be out of place to enter into a dessertation to prove the

transmission of malaria by mosquitoes. That has passed from the realm of speculation to that of established fact, and medical science claims a triumph in having demonstrated, experimentally and microscopically, that which a few years ago was supported only on theory.

The hæmamœbæ of man and the proteosoma of birds have been followed in their cycle of development from the blood corpuscles of the vertebrate animals to the alimentary canal of mosquitoes, through the walls of which they make their way, and develop spores in the general circulation. These spores, collecting in the venemo-salivary gland, with its excretary duct emerging at the mosquitoe's proboscis, are returned to the intermediary host by the bite of the insect.

Accepting unreservedly that which is capable of demonstration, we are not to reject that which is based on plausible theory, though it may as yet lack scientific verification. In this connection it may be pertinent to consider whether there may be methods of inoculation of malaria other than by mosquitoes.

There are many who hold to the exclusive transmission of malaria by mosquitoes; and some of these have achieved such distinction in this field of investigation, that it may seem like rasheness to attempt to controvert the theory supported by the prestige of these great names.

It is, however, a logical fallacy to accept a part for the whole and to consider that the discovery of one avenue of infection affords a complete solution of the problem, and precludes the possibility of others.

The theory of infection by inspired air is so old that it is considered rather antiquated by the enthusiasts for the new discovery. If the theory of malarial infection by means of inspired air is to be considered a relic of fogyism, it will require more evidence than has yet been given to prove that it is innocuous in this respect.

The efforts to determine this experimentally have been so few, and so crudely conducted, that there is no parallel between the conditions existing between the expriments, and the conditions existing in everyday life. When small quantities of air have been taken from malarious districts, and the attempt made to infect

subjects with it, the failure of success in these cases can not negative the theory they were designed to prove.

We find malaria prevalent under two opposite conditions—extremly wet and extremly dry weather. The first named condition is favorable to the propagation of mosquitoes, while the second condition offers directly opposite results. If infection occurred exclusively through the medium of these insects then the reduction of malaria should keep equal pace with the reduction of mosqutioes.

Such, however, is not the case according to published statistics. It is reported that Mr. Gorgas, Chief Sanitary Officer of Havana, has reduced malaria by fifty per cent., and has reduced mosquitoes by ninety per cent. Here we find a difference of forty per cent. in the ratio of reduction, which would indicate that there is probably some other avenue open to infection.

It is to be borne in mind that the same conditions that prevailed in Cuba, in regard to malaria and yellow fever, under Spanish rule, also prevailed in Jamaica, under Spanish rule; and the improvement in the conditions of health in Cuba in the last three years finds its prototype in Jamaica generations ago, under English rule, long before there was any organized crusade for the extermination of mosquitoes.

The most ardent advocates of the doctrine of infection by mosquitoes exclusively decide the possibility that the air may act as a carrier of infection, and consider all such theories as fancy born of the inability to appreciate the advances of science.

It is a notable fact, that, in places where malaria is rife, the indiscriminate upturning of soil in cities during the months of hot weather, has been followed by increase in the number of cases of malaria with such regularity that, if it is not an example of cause and effect, it has been a coincidence of such regular occurrence as to attract the attention of competent observers for generations past.

After Laveran discovered the malarial parasite in the blood in 1880, fifteen years elapsed before Ross determined its presence in the mosquitoes, and traced its cycle of development, and method of return to the human subject. During these long years of

careful research, all efforts failed to identify the parasite outside of the vertebrate host.

The failure of microscopists to identify hæmamœbæ or their spores in the soil, air or water, so far from disproving their presence in these media, is a stimulous for other investigators to continue the research, and win laurels similar to those already won by Ross, Manson and others.

It does not require a great stretch of the imagination to infer that resistent spores may be scattered broadcast in the soil and in water, and by the agency of winds, and by the noxious effluvia from water and from foul soil, may be constantly in the atmosphere, ready to produce infection through the medium of inspired air.

Mosquitoes draw nourishment from plants, fruits and water; and if they discharge infected saliva in the act of drawing blood from the human subject, it follows by analogy that they also discharge infected saliva in the act of drawing nourishment from the other sources above mentioned. If we admit the eixstence of malarial spores outside of the organisms of the malarial kingdom, then infection by aerial transmission becomes more than a probability.

It is an uncontroverted fact that tubercle bacilli gain entrance to the human organism by means of inspired air; if true in regard to tuberculosis, why should it not also be credible in regard to malaria.

No less authority than Ronald Ross informs us that the malaria-bearing mosquitoes are propagated mainly in shallow, stagnant pools, not subject to being flushed out with running water; while the Culex, or harmless variety, are propagated mainly in vessels filled with rain-water and other similar sources. The same authority also tells that mosquitoes have very short migrations and seldom wander far from their places of incubation.

If these observations are correct, we will not find many places suitable for the propagation of anopheles, or malaria-bearing mosquitoes, in cities that keep pace with modern sanitary regulations. It would be a difficult matter to find shallow, stagnant pools in any city of North Carolina; yet, perhaps, there is no city

of the eastern part of North Carolina but what furnishes its quota of malarial fever during the hot and sultry months of summer and early fall.

The evidence thus far obtained shows that mosquitoes do not, directly or indirectly, infect their ova or young, and that mosquitoes are germ-free till they have become infected by feeding on the blood of malarial patients.

If we assume that nearly all mosquitoes die during winter, and that all young ones are at first innocuous, we will have difficulty in explaining the rapid and simultaneous occurrence of malaria over large areas of territory, with the advent of warm weather, unless we admit the hypothesis of some other source of infection.

FEVERS AND THE MICROSCOPE.

By HUGHES B. HOYLE, M. D., Davidson, N. C.

Without doubt the greatest achievement in medicine in the last quarter century is the discovery of the malarial organism and the method by which it is introduced into the human body. For by putting this knowledge into practice we can absolutely control this most widespread disease.

That malarial fever, in all its forms, is caused by the presence of an ameba in the blood is a fact accepted by all scientific physicians; that the mosquito is the agent by which the patient is inoculated is equally well established.

But it is not the purpose of this paper to give the history of these discoveries, as interesting as it may be, nor yet to eulogize the patient investigators, who have given this knowledge to the profession, though they deserve the highest praise that could be heaped upon them, but to tell of the microscopical methohs in the diagnosis of the common fevers such as we have in North Carolina.

There are three distinct varieties of the malarial ameba, the tertian, quartan, estivo-autumnal.

The tertian and quartan organisms are so nearly alike that an ordinary observer cannot distinguish them except by the length of time required in their development, the tertian requiring 48 and the quartan 72 hours to mature.

The organisms of quartan and tertian fever begin their existence as small hyaline bodies inside the red blood corpuscle.

In the fresh unstained specimen they may be seen as small clear looking bodies; either round or irregular in shape, having ameboid movement. They soon begin to develop a pigment, which may be seen in the centre of the organism.

Then sporulization takes place, by which the ameba is divided into 15 or 20 segments or spores, which develop, in turn, into full grown ameba. This cycle is completed in the tertian organism in 48 hours, in the quartan in 72 hours.

The tertian form is much more common than the quartan, at least in my experience, the ratio being twenty to one.

There is rarely any difficulty in a diagnosis of the intermitent fevers, even without the blood examination. Having to distinguish it from septic infections and the intermitent fever of tuberculosis, the microscopical examination of the blood is of value, and in skillful hands never disappoints by giving an uncertain result.

The organism of estivo-autumnal fever differs from the organism of the intermittents by being smaller in size, and having very little pigment.

There is also a form in the shape of a crescent, which is peculiar to this species. This form is, as a rule, extra corpuscular.

Unfortunately this parasite is not always easily found in continued malarial fevers, but, of course, when it is found it is a certain method of diagnosis.

This organism is invariably the cause of pernicious malarial fever.

For diagnosis of typhoid by means of the microscope we depend almost entirely upon the Widal serum reaction.

While, of course, this test is not absolutely conclusive, still it is a very valuable adjunct to our other resources, and when taken in connection with the absence of the malarial parasite it should be regarded as absolute.

In proof of the value of these procedures I could report 58 cases of typhoid in which the serum test was made, with negative results in only two cases, and quite a large number of cases of malarial intermittent, in which the parasites were found without ex-

ception. However, I cannot give such a favorable report in remittent malarial, finding the parasites in only about 80 per cent. of the cases examined.

I will report three cases that I think deserve special mention: One is a case of mixed infection, the second a case of typical malarial, which was wrongly diagnosticated typhoid, and the third is pernicious malarial:

I. E. S., female, age 12, had "dumb chills" for several weeks before calling a physician. When first seen, 10 a. m., Sept. 2, temperature 102, pulse 90, abdomen tympanitic and tender, no rose spots, constipated, tongue brown-fur. Sept. 3, 10 a. m., temperature 104 1-2, other symptoms as before. Examined blood and found the malarial parasites. Exhibited quinine sulphate in 3 grain doses four times a day after a calomel purge. Sept. 4, temperature 102 1-2, bowels very tender, tongue still brown coated. Sept. 5, temperature 103. Sept. 6, 5 p. m., temperature 103. Sept. 7, 10 a. m., temperature 102; 5 p. m., 103; rose spots on abdomen; made serum test and got a good clumping reaction.

The case progressed like an ordinary case of typhoid, and convalescence was begun the fifth week.

This, I believe was a genuine case of typho-malarial fever.

II. L. F., female, age 20, seen first Aug. 8, had been feeling bad several days, temperature 100 1-2, pulse 80, abdomen tender. Aug. 9, 10 a. m., temperature 100, other symptoms as before; 6 p. m., temperature 101, slight diarrhoea; made serum test with negative results. The symptoms continued to simulate typhoid, the temperature gradually rising until it reached 104 the second week. No rose spots appeared on the abdomen, which shook my faith in the diagnosis. Made examination of the blood and found the estivo-autumnal parasite; exhibited quinine sulphate, 5 grains every four hours, after a purge of calomel, podophyllin and soda. Aug. 20, temperature was normal and convalescence was established.

III. R. C., male, age 24, seen Sept. 19, after a "convulsion." Patient comatose, temperature 106; diagnosis, uremic poison. Later I learned that patient had been having chills, and the diagnosis was changed to pernicious malaria.

Gave 40 grains of quinine sulphate, per rectum, which was passed after 20 minutes; repeated dose in one hour.

The patient developed a remittent fever, which resisted quinine, in heroic doses, for two weeks. The temperature ranging from 101 1-2 to 104.

I made an examination of blood, the second day, and found the estivo-autumnal parasites in abundance.

Report of the Board of Medical Examiners.

J. HOWELL WAY, Secretary.

Applicants Licensed, Fortieth Annual Session North Carolina State Board of Medical Examiners, Wrightsville Beach, Wilmington, N. C., June 11, 1902.

Richard H. Johnston, Baltimore, Md.; Herbert H. Waite, Asheville; Fred W. Phifer, Statesville; Samuel M. Withers, Davidson; Jno. Walter Jones, Boone; Chas. Lee Duncan, Beaufort; J. P. Matheson, Taylorsville; Robt. Horllee Bellamy, Wilmington; Jacob H. Shuford, Hickory; Edith B. Blackwell, Greensboro; Catherine P. Hayden, Raleigh; Lloyd P. Russell, Fletcher; Wm. H. Boone, Elon College; James Frampton, Hendersonville; Joseph Graham, Hillsboro; Emmanuel A. Hennessee, Glen Alpine; William K. Lane, Goldsboro; McLain Rogers, Clyde; Isham F. Hicks, Faison; Eugene Yount, Conover; J. Rufus McCracken, Clyde; Lewis C. Covington, Vanceboro; Archibald B. McQueen, Raeford; Iram Hardy, Washington; James M. Taylor, Pittsboro; W. W. Washam, Davidson; L. R. Kirkpatrick, Blackstock, S. C.; Parks M. King, Concord; Lewis C. Skinner, Davidson; Jno. W. McLean, Cameron; James E. Cathell, Tyro Shops; Peter H. Williams (col.), West Raleigh; Jno. W. Walker (col.), Asheville; Clarence S. Brown (col.), Winston; William B. Sharp (col.), Harrellsville; James W. Watkins (col.), Reidsville; Lynn McIver, Sanford; Jno. R. Paddison, Mt. Airy; George P. Edwards, Hildebran; George E. Morton, Granville; Ben. F. Barnes, Elm City; Jno. L. Waltz, London; C. E. Reitzell, Liberty; Arthur R. Gerard, Flat Rock; Henry Byrne Maxwell, Whiteville; Fred R. Cooke, Louisburg; James A. Sisk, Harmony; James M. Williams, Warsaw; C. B. Wiseman, Henrietta; Edwin S. English, Brevard; E. A. Houser, Fallston; L. B. Harrell, Caroleen; Mc.G. Andrews, Connelly Springs; Geo. Oates, Grover; Chas. E. Reed, Hot Springs; George Huntington, Asheville; W. P. Exum, Jr., Saulston; H. S. Munroe, Lenoir; Geo. K. Collier,

Wilmington; Geo. H. Costner, Lincolnton; Jno. Lewis Hanes, Winston; L. C. Keerans, Charlotte; Herbert D. Walker, Creswell; Pride J. Thomas, Wilmington; Edward W. Phifer, Morganton; James McK. Hunter, Cherryville; Jas. L. Ballow, Crumper; William H. Grant, Pine Bluff; J. Warren Bailer, Mineral Springs; Carey P. Rogers, Raleigh; Hugh Wilson, Williams' Mill; Edward M. Gayle, Warrenton.

Total applications, 86; licensed, 72; rejected 14.

TABLE SHOWING DATE, PLACE OF GRADUATION AND GRADE OF EACH APPLICANT.

1	R	University of Maryland,	1894	85 3-7
2	"	" " Michigan,	1901	86 6-7
3	"	" " Maryland,	1902	84 6-7
4	"	North Carolina Medical College,	1902	85 5-7
5	"	U. S. Grant University,	1900	84 3-7
6	"	University of Maryland,	1902	90 4-7
7	"	North Carolina Medical College,	1902	85 6-7
8	"	Jefferson Medical College,	1902	87 1-7
9	"	University of Michigan,	1901	87 1-7
10	"	Woman's Med. Col. N. Y. Infirmary,	1891	87 2-7
11	"	University of Colorado,	1894	80 4-7
12	"	" " Nashville,	1901	80 4-7
13	"	North Carolina Medical College,	1902	88 3-7
14	"	South Carolina " "	1894	80 4-7
15	"	Tennessee " "	1902	75 6-7
16	"	University of Pennsylvania,	1901	88 6-7
17	"	U. S. Grant University,	1900	80 6-7
18	"	Jefferson Medical College,	1902	85 1-7
19	"	College of P. and S., Atlanta, Ga.,	1902	84 1-7
20	"	" " " " " "	1902	75 3-7
21	"	North Carolina Medical College,	1902	88
22	"	" " " "	1902	90 5-7
23	"	" " " " .	1902	90 4-7
24	"	Medical College of Virginia,	1901	84 3-7
25	"	" " " "	1900	77 2-7

26	B	North Carolina Medical College,	1902	80 6-7
27	"	Medical College of Virginia,	1901	81 1-7
28	"	Atlanta Medical College,	1895	69 2-7
29	"	Medical College of Virginia,	1901	82 6-7
30	"	North Carolina Medical College,	1898	77 6-7
31	"	Memphis Hospital College of Medicine,	1902	74 2-7
32	"	North Carolina Medical College,	1901	84 4-7
33	"	" " " "	1902	85 3-7
34	"	University and Bellevue, N. Y.,	1902	89 2-7
35	"	North Carolina Medical College,	1902	88 3-7
36	"	" " " "	1902	82 6-7
37	"	University of Maryland,	1899	80 4-7
38	"	Howard University,	1900	75 2-7
39	"	Leonard Medical College,	1901	85 1-7
40	"	" " "	1902	82 1-7
41	"	" " "	1901	84 4-7
42	"	" " "	1901	82 6-7
43	"	" " "	1901	80 2-7
44	"	" " "	1901	76 1-7
45	"	" " "	1902	75 5-7
46	"	University of Kentucky,	1901	88
47	"	University of Maryland,	1902	88 1-7
48	"	University of Georgia,	1902	90 1-7
49	"	" " "	1902	85 2-7
50	"	University of Maryland,	1902	88 6-7
51	"	Southern Medical College of Atlanta,	1897	80
52	"	U. S. Grant University,	1900	75 4-7
53	"	College of P. and S., Atlanta,	1902	85 1-7
54	"	Bellevue Hospital Medical College,	1895	92 5-7
55	"	University of Maryland,	1902	83
56	"	Tulane University of Louisiana,	1901	88
57	"	North Carolina Medical College.	1902	80 2-7
58	"	U. S. Grant University,	1900	74 4-7
59	"	University of Maryland,	1902	83 6-7
60	"	College of P. and S., Baltimore,	1902	80 2-7
61	"	University of the South,	1901	84 1-7
62	"	University of Baltimore,	1902	83
63	"	U. S. Grant University,	1897	80

64	"	Maryland Medical College,	1901	80 3-7
65	"	University of Louisville,	1900	80
66	"	University of Baltimore,	1900	70
67	"	Jefferson Medical College,	1895	84 6-7
68	"	College of P. and S., New York,	1871	82 3-7
69	"	Medical College of Virginia,	1901	88
70	"	Baltimore Medical College,	1891	55 6-7
71	"	North Carolina Medical College,	1902	89 6-7
72	"	College of P. and S., Baltimore,	1900	86
73	"	North Carolina Medical College,	1902	77 1-7
74	"	University of Maryland,	1901	80 4-7
75	"	" "	1902	91 5-7
76	"	" "	1902	80
77	"	" "	1902	84 1-7
78	"	" "	1902	83 5-7
79	"	North Carolina Medical College,	1902	84
80	"	Louisville Medical College,	1896	81 6-7
81	"	University of Nashville,	1901	84 1-7
82	"	Dartmouth Medical College,	1859	80
83	"	College of P. and S., St. Louis.	1901	80
84	"	Johns Hopkins Medical College,	1902	90 5-7
85	"	University of Georgia,	1891	82 1-7
86	"	University of Virginia,	1902	86 1-7

LIST OF APPLICANTS BY COLLEGES.

COLLEGE OF GRADUATION.	Applied.	Licensed.	Rejected.
University of Maryland	13	13	
University of Michigan	2	2	
University of U. S. Grant, Tenn.	5	3	2
University of Colorado	1	1	
University of Virginia	1	1	
University of Nashville, Tenn	2	2	
University of Pennsylvania	1	1	
University of Kentucky	1	1	
University of New York & Bellevue, N. Y.	2	2	
University of Tulane, La.	1	1	
University of Georgia	3	3	
University of Howard, D. C	1		1
University of the South, Tenn	1	1	
University of Baltimore, Md	2		2
University of Louisville, Ky	1	1	
University of College of Medicine, Va	2	1	1
College of P. & S., Baltimore, Md	2	2	
North Carolina Medical College, N. C.	16	14	2
Maryland Medical College, Md.	1	1	
Jefferson Medical College, Penn	3	3	
College of P. & S., N. Y.	1	1	
Baltimore Medical College, Md.	1	1	
Louisville Medical College, Ky	1	1	
Dartmouth Medical College, N. H.	1	1	
College of P. and S., St. Louis, Mo	1	1	
Woman's Medical College, N. Y. Inf.	1	1	
South Carolina Medical College, S. C	1	1	
Medical College of Virginia	3	3	
Atlanta Medical College, Ga.	1	1	
Southern Medical College of Atlanta, Ga.	1	1	
Atlanta College of P. and S., Ga.	3	1	2
Tennessee Medical College, Tenn	1		1
Memphis Hospital College of Med. Tenn.	1		1
Leonard Medical College, N. C.	7	5	2
Johns Hopkins Medical School, Md.	1	1	
Totals	86	72	14

RECORD OF THREE YEARS, 1897, 1898 AND 1899.

(Non-graduates admitted to examination.)

NAMES OF COLLEGE OF GRADUATES.	Applied.	Licensed.	Rejected.
University, National, D. C.	1	1	
University of Missouri	1	1	
University of Maryland	42	38	4
University of Pennsylvania	4	4	
University College of Medicine, Virginia	13	13	
University of Tennessee	1	1	
University of New York and Bellevue	7	6	1
University of Virginia	4	4	
University of Vermont	1	1	
University, U. S. Grant, Tennessee	5		5
University of Kentucky	1		1
University of Tulane, La.	2	2	
University of Georgia	3		3
University of Louisville, Kentucky.	1	1	
University, Vanderbilt, Tennessee	11	6	5
University of Nashville, Tennessee	6	4	2
University of Paris, France	1	1	
University, Georgetown, D. C.	1	1	
University, Columbian, D. C	1	1	
University of Baltimore	2	2	
College of P. and S., New York	2	2	
College of P. and S., Boston	1	1	
College of P. and S., Baltimore	4	3	1
Kentucky School of Medicine	6	3	3
Medical College of Virginia	9	8	1
Leonard Med. College (col,), N. C.	14	11	3
Atlanta Medical College, Ga	3	2	1
N. C. Medical College, N. C.	11	5	6
Baltimore Medical College, Maryland.	17	13	4
Long Island Med. College, New York	5	5	
S. C. Medical College, S. C	2	2	
Louisville Medical College, Kentucky.	7	6	1
Illinois Medical College, Illinois.	1	1	
Missouri Medical College, Missouri.	1	1	
Chicago Homeop. Med. College, Illinois	1	1	
Medical College of Alabama, Alabama	1	1	
Medico-Chirurgical, Pennsylvania	1	1	

RECORD OF THREE YEARS, 1897, 1898 AND 1899.

(Non-graduates admitted to examination.

(CONTINUED.)

NAMES OF COLLEGE OF GRADUATES.	Applied.	Licensed.	Rejected.
Jefferson Medical College, Pennsylvania	1	1	
St. Louis Medical College, Missouri	1	1	
Ohio Medical College, Ohio	3	2	1
Medical College of Maine, Ohio	1	1	
Southern Medical College, Georgia	2	1	1
Laura Memorial Medical College, Ohio	1	1	
Non-graduates	43	25	18
Totals	246	185	61

RECORD OF THREE YEARS 1900, 1901 AND 1902.

(Only Graduates admitted to examination.)

APPLICANTS' COLLEGE OF GRADUATION.	Applied.	Licensed.	Rejected.
University of Maryland	37	36	1
University of Michigan	4	4	
University, U. S. Grant, Tennessee	8	3	5
University of Colorado	2	1	1
University of Nashville, Tennessee	9	4	5
University of Pennsylvania	8	8	
University of Kentucky	1	1	
University of N. Y. and Bellevue, N. Y.	2	2	
University, Tulane, Louisiana	2	2	
University of Georgia	5	4	1
University, Howard, D. C	3	1	2
University of the South, Tennessee	2	1	1
University of Baltimore, Maryland	3		3
University of Louisville, Kentueky	1	1	
University of College of Med., Virginia	29	27	2
University of Tennessee	6	3	3
University, Columbian, D. C	1	1	

RECORD OF THREE YEARS, 1900, 1901 AND 1902.

(Only graduates admitted to examination.)

(CONTINUED.)

APPLICANTS' COLLEGE OF GRADUATION.	Applied.	Licensed.	Rejected.
University, Yale, Connecticut	1	1	
University of Virginia	3	3	
University of Wooster, Ohio	1	1	
University, Central, of Kentucky	1	1	
University of Vermont	1	1	
College of P. and S., Baltimore, Md	4	4	
College of P. and S., St. Louis, Mo	1	1	
College of P. and S., Atlanta, Ga	9	5	4
College of P. and S., New York	3	3	
College of P. and S., Ontario	1	1	
Woman's Medical College, New York	3	3	
Syracuse Medical College, New York	1	1	
Medical College of Virginia	15	12	3
Baltimore Medical College, Maryland	7	5	2
Medical College of South Carolina	9	5	4
Jefferson Medical College	8	8	
Leonard Medical College, North Carolina	16	9	7
Kentucky School of Medicine	1	1	
North Carolina Medical College	27	23	4
Southern Medical College, Georgia	4	1	3
Starling Medical College, Ohio	1		1
Meharry Medical College, Tennessee	3		3
Medical College of Alabama	1	1	
Chicago Homeop. Medical College	1	1	
Atlanta Medical College, Georgia	2	2	
Maryland Medical College	3	1	2
Dartmouth Medical College	2	2	
Louisville Medical College	1	1	
Tennessee Medical College	3		3
Johns Hopkins Medical School	1	1	
Totals	257	197	60

FOR SIX YEARS ENDING JUNE, 1902.

COLLEGE OF GRADUATION.	Applied.	Licensed.	Rejected.
University of Maryland	79	74	5
University of Michigan	4	4	
University, U. S. Grant, Tennessee	13	3	10
University of Colorado	2	1	1
University of Nashville, Tennessee	15	8	7
University, Georgetown	1	1	
University of Pennsylvania	12	12	
University of Paris, France	1	1	
University of Kentucky	2	2	
University of N. Y. and Bellevue, N. Y.	9	8	1
University, Tulane, Louisiana	4	4	
University, Vanderbilt, Tennessee	11	6	5
University of Georgia	8	4	4
University, Howard, D. C	3	1	2
University of the South, Tennessee	2	1	1
University of Baltimore, Maryland	5	2	3
University of Louisville, Kentucky	2	2	
University College of Medicine, Virginia	42	40	2
University of Tennessee	7	4	3
University, Columbian, D. C	2	2	
University, Yale, Connecticut	1	1	
University of Virginia	7	7	
University of Wooster, Ohio	1	1	
University, Central, of Kentucky	1	1	
University of Vermont	2	2	
College of P. and S., Baltimore, Md	6	6	
College of P. and S., St. Louis, Mo	1	1	
College of P. and S., Atlanta, Ga	9	5	4
College of P. and S., New York	5	5	
College of P. and S., Ontario	1	1	
College of P. and S., Boston, Mass	1	1	
Woman's Medical College, New York	3	3	
Syracuse Medical College, New York	1	1	
Medical College of Virginia	24	20	4
Baltimore Medical College, Maryland	24	18	6
Medical College of South Carolina	11	7	4
Jefferson Medical College, Pennsylvania	9	9	
Leonard Medical College, North Carolina	30	20	10
Kentucky School of Medicine	7	4	3

FOR SIX YEARS ENDING JUNE, 1902.

(CONTINUED.)

COLLEGE OF GRADUATION.	Applied.	Licenzed.	Rejected.
North Carolina Medical College	38	28	10
Southern Medical College, Georgia	6	2	4
Starling Medical College, Ohio	1		1
Meharry Medical College, Tennessee	3		3
Medical College of Alabama	2	2	
Chicago Homeop. Med. College, Illinois	2	2	
Atlanta Medical College, Georgia	5	4	1
Maryland Medical College, Maryland	3	1	2
Dartmouth Medical College, N. H.	2	2	
Louisville Medical College, Kentucky	8	7	1
Tennessee Medical College, Tennessee	3		3
Long Island Medical College, New York	5	5	
Missouri Medical College, Missouri	1	1	
Medico-Chirurgical College, Pennsylvania	1	1	
St. Louis Medical College, Missouri	1	1	
Ohio Medical College, Ohio	3	2	1
Med. Dept. National University, D. C	1	1	
Laura Memorial Medical College, Ohio	1	1	
Illinois Medical College, Illinois	1	1	
Johns Hopkins Med. School, Maryland	1	1	
Non-graduates	43	25	18
Total	503	382	121

The Conjoint Session with the State Board of Health.

The Conjoint Session with the State Medical Society was held as usual, on Wednesday of the meeting, the 12th.

President Thomas, on taking the chair, made a short but excellent address, devoting himself chiefly to the best method of abating one of the greatest menaces to the public health—the incompetent physician. In order to eliminate the personal element, he suggested that all information necessary to conviction of illegal practitioners be furnished, by those coming into its possession to the secretary of the board, who would then, in his official capacity, bring the matter to the attention of the solicitor of the district in which the violator of the law resides. Subsequently this request was made, and we trust it will bring forth fruit. There are comparatively few illegal practitioners in the State, but one is too many.

The Secretary of the Board submitted his annual report, which will be found below.

Dr. Tait Butler, the new State Veterinarian, being present by invitation of the Board, was offered the privilege of the floor and invited to participate in the discussions. He made a very favorable impression by an excellent talk on bovine tuberculosis, and called upon the medical men present to use their influence to build up a public opinion in support of its regulation by the State, rightly holding that legislation would be of no avail unless backed up by public opinion.

ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA BOARD OF HEALTH.

The work of the Board during the past year has been chiefly routine in character, but none the less useful on that account, we hope. Since the more important items have been previously published in the Bulletin, which is mailed every month to every physician in the State, and since a full report, in detail, for the

years 1901-1902, will be made to the next Legislature, which meets early in January, 1903, it is unnecessary and inadvisable to take up the limited time at our disposal by a report of that character, on this occasion. I will, therefore, confine myself to a statement, in a general way, of the more important work. This is mainly included under sewerage investigations, inspections of some of the State's institutions, bacteriological work, the organization of the State Board of Embalming and efforts to control smallpox

SEWERAGE.

At the request of the City Board of Health of Wilmington an investigation of the method of sewering that city, proposed by the Wilmington Sewer Company, was made by Colonel Shaffer, the engineer of the Board at that time, and recommendations made by the committee appointed by the President of the Board. The result was a modification of the plans in accordance with the suggestions made.

In compliance with an act of the Legislature, referring the settlement of a controversy between the municipal authorities of Blowing Rock and the two leading hotels of that summer resort, a committee of the Board investigated and settled the matter.

INSPECTIONS OF STATE INSTITUTIONS.

The State Hospital and the School for the Deaf and Dumb, at Morganton, were inspected and found in excellent condition. By request of the proprietors, an inspection of the private sanitorium, known as Broadoaks, more especially its water supply, was also made. The other State institutions will receive their usual biennial inspection before the meeting of the next General Assembly.

BIOLOGICAL LABORATORY.

As stated in my last report, at Durham, the State Board of Agriculture, at its meeting in December, 1900, at our request, agreed to have certain bacteriological work done for the Board in its laboratory. At first this was limited to examinations of suspected drinking waters, but was later extended so as to include specimens from diphtheria cases, blood in doubtful cases of fever, and sputum. This generous action on the part of the Board of

Agriculture, I am sorry to say, has not been appreciated, or at least availed of, by the profession, as was hoped and expected. According to the report of the Biologist of the Department, Mr. McCarthy, the total number of biological analyses made in the past six months was 141—35 pathological, mostly of sputum, 48 of drinking water and 58 of milk—a total of 83, or an average of only 14 a month. When we consider the fact that there are about 1,500 physicians in the State, it will be seen that less than one per cent. take advantage of the valuable privilege offered. The Board of Agrlculture can hardly be expected to do this work for us indefinitely, and the time will come when we must appeal to the Legislature for an appropriation for it. The way to obtain this is to show conclusively the value and importance to the people of the work, and the extent to which the laboratory is patronized would be an index of the opinion of the medical profession as to its value. It is to be hoped, therefore, that our physicians will avail themselves more freely of these opportunities. It is interesting to note that only one sample of milk was found infected with the tubercle bacillus and further investigation showed that to have been accidental.

BOARD OF EMBALMING.

The General Assembly, of 1901, passed an Act creating the State Board of Embalming, consisting of five (5) members, three from the State Board of Health and two practical embalmers, all to be elected by the Board of Health. At the last annual meeting, in compliance with the Act, Drs. Battle, Duffy and R. H. Lewis, of the board, and Messrs. J. M. Harry and H. W. Simpson, practical embalmers, were elected. The Board of Embalming thus created, organized on July 5, 1901, by electing Mr. J. M. Harry, of Charlotte, President, and Mr. H. W. Simpson, of Newbern, Secretary and Treasurer. Since that time three meetings have been held for examination of applicants for license to practice embalming, and sixty-three licenses have been granted. This action put us abreast, on this line, of the most progressive and advanced boards of health of the country. The importance of having this work, in cases of infectious diseases, done by one competent, not only to embalm, but to properly disinfect the room and effects is self-evident. In order to impress upon the

undertakers of the State the importance of thorough disinfection and to set forth clearly, for their benefit, the best methods, I read a paper, entitled "The Embalmer in His Relation to Infectious Diseases," at the annual meeting, last month, of the State Funeral Directors and Embalmers' Association, which seemed to be appreciated, and which, I hope, will be productive of good. It was printed in the Bulletin for May, as you may have seen.

SMALLPOX.

As was anticipated and predicted, smallpox has continued to prevail in the State. Owing to the fact that no smallpox was reported from Wilson county, from May 1, 1901, to January 1, 1902, the Superintendent of Health, considering the eruptive disease, widely prevalent in the county, to be chickenpox, it is impossible to give an accurate statement for the whole State. Omitting Wilson county for the present, and confining ourselves to the other ninety-six counties, the totals are as follows: Number of counties infected (including Wilson), 55: number of cases (excluding Wilson), whites 618, colored 1,197, total 1,814; number of deaths, whites 21, or 3.40 per cent., colored 27, or 2.25 per cent., total 48, 2.64 per cent. The figures for the preceding year are: Cases, white 530, colored 1,415; total 1,945; deaths, white 15, or 2-83 per cent., colored, 23 or 1.63 per cent., total 36 or 1.95 per cent. From this it appears that the death-rate during the past year has been slightly higher than the year before, but not so high as the year preceding that, when it was 4.78 for the whites, 1.44 for the colored.

The chief difficulty in the management of the disease has been the same as heretofore—mistaken diagnosis as chickenpox. This was the trouble in Wilson County, the authorities not admitting it to be smallpox until an expert from the Marine Hospital Service, kindly sent at our request by Surgeon-General Wyman early in January, declared it to be unquestionably smallpox; and representatives from contiguous counties at a meeting held at Rocky Mount on the 14th of January threatened to quarantine against Wilson unless the precautions proper against smallpox were immediately taken by that county. From that time the disease was reported to me regularly as smallpox, the total number of cases, not classified as to color, being 333, with 6 deaths from

January 1st to May 1st. Prior to this period the Chairman of the County Sanitary Committee of Wilson told me, in a personal interview, that in his opinion there had been, up to the time of our conversation, 1,500 cases. So it is safe to say that, including the 333 cases reported after January 1st, there were during the past smallpox year between 1,500 and 2,000 cases in that one county. Adding this to the 1,817 cases reported from the rest of the State would make between 3,000 and 3,500 cases, the largest number ever occurring in the State in the same length of time.

Three counties, Camden, Pamlico and Tyrell, failed to comply with the law requiring the election of a Superintendent of Health. An outbreak of smallpox in Camden County last month, however, demonstrated the utter helplessness of the authorities to control the disease, and this fact, strongly re-enforced by the excellent work of Inspector Tayloe, brought about a prompt election of a Superintendent by the County Sanitary Committee. So that now there are only two counties in the State that are without that important official. We hope to secure action in these counties before we meet again.

The two smallpox inspectors, Drs. Tayloe and Harrill, have rendered good service, though their services, owing to previous experience with the disease on the part of the local authorities, have been less in demand than heretofore. Their reports are appended, as is a tabulated statement by counties of smallpox in the State from May 1, 1901, to May 1, 1902.

While nothing especially brilliant has been accomplished during the past year, the work of the Board, I think we can claim, is more appreciated than ever before.

SMALLPOX IN NORTH CAROLINA, MAY 1, 1901, TO MAY 1, 1902.

Counties.	Number of Cases.			Number of Deaths.		
	White.	Colored.	Total.	White.	Colored.	Total.
Alamance		8	8			
Beaufort	1		1	1		1
Buncombe	1	98	99		2	2
Burke	3		3			
Cabarrus	34	83	117	1	3	4
Caldwell		3	3			
Carteret	1		1			
Caswell		7	7		1	1
Catawba		1	1			
Cherokee	60	4	64	1		1
Cleveland	2	6	8	1		1
Cumberland	1	35	36		1	1
Davie		5	5			
Duplin		45	45		2	2
Durham	15	20	35			
Edgecombe	6	1	7			
Forsyth	26	75	101	1		1
Franklin		4	4			
Gaston	75	25	100	1	2	3
Graham	9		9			
Granville		4	4			
Greene	6	25	31		2	2
Guilford	11	14	25	1		1
Halifax		1	1			
Harnett	9	16	25	1		1
Haywood	4	4	8			
Henderson	32	41	73		2	2
Iredell	6	27	33			
Johnston	13	7	20			
Lenoir	4		4			
Lincoln	10		10			
McDowell	3	5	8			
Madison	10		10			
Martin	11		11			
Mecklenburg	73	300	373	2	3	5
Nash	27	16	43	2		2
New Hanover		1	1			
Orange	22	5	27			
Person	9	40	49		1	1
Polk	4	7	11			
Randolph	1	26	27			
Richmond	1	5	6			
Rockingham	11	36	47		1	1
Rowan	25	30	55	2	4	6
Rutherford	25	12	37			
Sampson	35	10	45	6		6
Stanly	7	40	47			
Stokes	2	3	5			
Surry			1			
Swain	3		3			
Union	1	17	18			
Wake	4	21	25		1	1
Wayne	15	60	75	1	2	3
*Wilson			333			6
Yadkin		6	6			
Total (in 55 counties)	618	1,199	1,814	21	27	48
Death rate, per cent.				3.40	2.25	2.64

*Report incomplete and not included in totals in this table.

LIST OF MEMBERS.

Members marked thus * were present at the last meeting.

*Aaron, L. P.	Mt. Olive	1897
Abel, J. F	Canton	1899
Abernathy, H. N	Denver	1898
Achorn, J. Warren	Boston, Mass	1899
Adams, M. R.	Statesville	1884
Adams, C. A.	Durham	1901
Alexander, Ab	Columbia	1896
Alexander, Annie L	Charlotte	1885
Alexander, J. R	Charlotte	1898
Allen, R. L	Waynesville	1899
Alston, P. B	Henderson	1868
Alston, Willis	Littleton	1870
*Altman, G. S	Stonewall	1902
Ambler, C. P	Asheville	1891
*Anderson, Albert	Wilson	1889
*Anderson, C. A	Burlington	1899
*Anderson, T. E	Statesville	1879
*Anderson, W. S	Wilson	1888
Archey, L. M	Concord	1888
Asbury, F. E	Asbury	1896
Ashby, Thos. B	Mt. Airy	1896
Ashcraft, J. E	Monroe	1888
Ashworth, B. L	Marion	1895
Atkinson, W. H	707 12th St., N. W., Wash'gt'n	1892
*Averitt, K. G	Cedar Creek	1902
Bagwell, W. H	Greenville	1887
Bahnson, H. T	Salem	1869
Baird, H. L	Asheville	1897
Baker, Julian M	Tarboro	1879
Ballou, J. L	Crumpler	1902
Banner, C. W	Greensboro	1901
Barnes, B. F	Elm City	1902
Barrier, P. A	Mt. Pleasant	1861
*Bass, H. T	Tarboro	1883
Bass, H. Hartwell	Henderson	1900
*Battle, J. T. J	Greensboro	1889
*Battle, K. P., Jr.	Raleigh	1889
Battle, S. W	Asheville	1887
Baum, Edward	Greensboro	1901
Beall, J. F	Linwood	1887

Beall, W. P.	Greensboro	1879
*Bellamy, R. H.	Wilmington	1902
*Bellamy, W. J. H.	Wilmington	1870
Bell, G. M.	Wakefield,	1893
Bennett, A. M.	Bryson City	1899
Black, J. C.	Pioneer Mills	1891
*Blair, J. M.	Monroe	1898
*Blount, J. G.	Washington	1893
Blue, K. A.	Laurinburg	1892
Boddie, N. P.	Durham	1883
Bolton, Mayland	Rich Square	1885
Bonner, H. M.	Aurora	1902
Booth, S. D.	Oxford	1885
*Booth, T. L.	Oxford	1890
Borden, Sallie	Goldsboro	1900
Bowen, W. D.	Bath	1896
Boyte, E. C.	Mount Holly	1898
Brantly, H.	Spring Hope	1901
Brevard, R. J.	Charlotte	1887
Broadnax, J. G.	Greensboro	1888
Brooks, T. L.	Black Creek	1899
Brooks, L. T.	Durham	1901
*Brown, G. A.	Bear Poplar	1898
Brown, J. S.	Salisbury	1895
Brown, Zeno	Greenville	1885
Brown, E. M.	Washington	1901
Browning, B. Ray	Littleton	1899
Brownson, W. C.	West Asheville	1896
Buchanan, E. J.	Lexington	1900
*Bullock, D. W.	Wilmington	1875
Burroughs, J. A.	Asheville	1889
Burrus, J. T.	Jonesville	1898
Bynum, John	Winston	1896
Bynum, Wade H.	Germanton	1900
Caldwell, D. G.	Concord	1885
Campbell, J. I.	Wadesboro	1898
Campbell, James R.	Newton	1898
*Carr, A. G.	Duram	1873
Carr, J. B.	Old Sparta	1885
Cason, H. M. S.	Edenton	1899
*Cathell, J. E.	Tyro Shops	1902
Champion, C. C.	Mooresboro	1898
*Cheatham, A.	Durham	1888
Cheatham, Goode	Henderson	1896
Cheeseborough, Thos. P.	Asheville	1899
Chenault, W. F.	Elmwood	1891

Cobb, W. H., Jr	Goldsboro	1890
*Cobb, W. H. H	Golbsboro	1878
Coggeshall, G. A	Oxford	1897
*Collier, G. K	Wilmington	1902
*Cooke, F. K	Louisburg	1902
Corbell, E. F	Sunbury	1900
Corroll, E. D. Dixon	Raleigh	1900
Costner, Thos. F	Lincolnton	1897
*Costner, Geo. H	Lincolnton	1902
Cotton, A. T	Morrisville	1885
Cotton, Clyde C	Black Mountain	1901
Covington, J. M	Rockingham	1879
*Covington, L. C	Vanceboro	1902
Cox, B. T	Redalia	1888
Cox, E. L	Jacksonville	1892
Crocker, S. H	Moyeton	1899
Croom, J. D	Maxton	1887
*Crowell, A. J	Charlotte	1894
*Crowell, L. A	Crimsic	1898
Crowell, Samuel McK	Madge	1898
*Crowell, W. H	Whiteville	1896
Dalton, D. N	Winston	1896
Daniel N. C	Oxford	1899
Davidson, John E. S	Huntersville	1898
Davidson, W. Sinclair	Triangle	1898
Davis, R. L	Sylva	1893
Davis, Thos. W	Louisburg	1899
Davis, H. C	Fayetteville	1901
Dawson, W. W	Grifton	1900
*DeArmond, J. Mc	Mint Hill	1887
Dixon, Joseph	Ayden	1895
Dickinson, E. T	Smithfield	1900
Dixon, W. H	Edward	1904
Dodson, H. H	Milton	1886
Dorsett, H. W	Bethany	1885
Doughton, Geo	North Wilkesboro	1896
*Duffy, Francis	Newbern	1872
Duke; J. H., Jr	Asheville	1901
Dunn, W. L	Asheville	1900
Ector, J. G	Friendship	1879
Edwards, G. C	Hookerton	1883
Edwards, J. D	Siler City	1894
Egerton, J. L	Hendersonville	1890
Ellis, R. C	Shelby	1891
Everington, Geo. D	Laurinburg	1898
*Faison; I. W	Charlotte	1878

*Faison, J. A.	Bennettsville, S. C.	1888
Faison, J. M.	Faison	1885
Faison, W. W.	Goldsboro	1883
Faucette, T. S.	Burlington	1896
*Fletcher, M. H.	Asheville	1881
Flippin, J. M.	Salisbury	1893
*Flippin, S. T.	Siloam	1898
*Flippin, R. E. L.	Pilot Mountain	1901
Fountain, Wm.	Leggett	1899
Fox, M. F.	Gilmer's Store	1885
Fowlkes, W. M.	Rockingham	1898
Freeman, W. G.	Murfreesboro	1884
Fulp, E.	Fulp	1896
Futrell, M. H.	Conway	1884
*Galloway, W. C.	Wilmington	1880
Garrison, D. A.	Bessemer City	1899
*Gayle, E. M.	Warrenton	1902
Gibbon, John H.	Philadelphia	1893
Gibbon, R. L.	Charlotte	1890
Gill, Robert J.	Henderson	1883
Gilmer, C. S.	Greensboro	1894
Gilreath, F. H.	Moravian Falls	1898
*Gladmon, Edwin	Southern Pines	1902
*Glenn, Eug. B.	Asheville	1898
Goelet, E. B.	Saluda	1881
Goley, W. R.	Graham	1893
*Goodman, E. G.	El Paso	1892
Goodwin, A. W.	Raleigh	1897
Gordon, J. R.	Jamestown	1894
*Gouger, Geo. J.	Concord	1899
Gove, Anna M.	Greensboro	1896
Grady, Earle	Tryon	1899
*Graham, B. R.	Wallace	1899
Graham, Geo. W.	Charlotte	1877
Graham, Joseph	Charlotte	1874
*Graham, Joseph	Hillsboro	1902
Graham, W. A.	Charlotte	1890
*Graham, Wm. A.	Durham	1901
Griffin, E. F.	Woodland	1900
Griggs, W. T.	Poplar Branch	1901
Grimsley, J. E.	Snow Hill	1884
Haigh, T. D.	Fayetteville	1874
Halloway, R. L.	Durham	1901
*Hallsey, B. F.	Roper	1900
*Hanes, J. L.	Winston	1902
*Hardy, Ira M.	Washington	1902

Hargrave, R. H.	Robersonville	1879
*Hargrove, W. F.	Kinston	1901
Harper, M. W.	Dunn	1886
*Harrell, W. H.	Williamston	1890
Harrell, W. J.	Aulander	1892
Harris, F. R.	Henderson	1883
Harris, H. H.	Wake Forest	1886
Harris, Joy	Burlington	1898
Harrison, Edmund	Greensboro	1900
Harrell, L.	Statesville	1900
Hartsell, F. E.	Big Lick	1902
Hassell, U. S.	Scotland Neck	1893
*Hays, B. K.	Oxford	1896
Haywood, F. J.	Raleigh	1898
Headen, W. E.	Morehead City	1891
Hemphill, W. E.	Arden	1898
Henley, S. A.	Asheboro	1888
*Herring, N. B.	Wilson	1888
Herring, B. S.	Wilson	1901
Hester, J. R.	Prospect Hill	1894
Hicks, W. V.	Durham	1901
Hicks, R.	Henrietta	1899
*Highsmith, Seavy	Hope Mill	1902
Highsmith, Charles	Parkersburg	1898
*Highsmith, J. F.	Fayetteville	1893
*Hill, D. J.	Lexington	1894
Hill, Joel	Lexington	1886
Hill, L. H.	Germanton	1877
Hilliard, W. D.	Asheville	1881
Hines, P. E.	Raleigh	1853
J. Allison Hodges	Richmond, Va	1883
*Holmes, F. H.	Clinton	1896
Holt, W. T.	Donahu	1896
Holt, W. P.	Williardville	1901
Houck, Albert	Lenoir	1893
Hoyt, A. C.	Washington	1900
Hudson, W. L.	Dunn	1894
Hughes, G. R.	Pollocksville	1894
Hunter, J. McK.	Cherryville	1902
Hunter, L. W.	Sardis	1880
Ingram, C. B.	Mt. Gilead	1892
Irwin, J. R.	Charlotte	1882
Ivie, G. M.	Stoneville	1894
Ivey, W. P.	Lenoir	1891
Jackson, C. C.	Plymouth	1894
Jenkins, C. L.	Raleigh	1892

*Jenkins, J. D.	Penola	1894
Jenkins, R. E.	Belmont	1898
Jewett, R. D.	Winston	1890
Jones, Clara E.	Goldsboro	1897
Jones, C. M.	Grimesland	1895
Jones, Clarence Porter.	Benson	1898
Jones, J. W.	Tarboro	1860
Jones, S. B.	Charlotte	1879
*Jones, W. J.	Goldsboro	1860
Jones, W. J.	Outlaw's Bridge	1898
Jones, W. J., Jr.	Wilson	1894
Jones, C. D.	Hillsboro	1901
Jordan, T. M.	Raleigh	1881
*Jordan, D. B.	Cronly	1902
Jordan, Chas. S.	Asheville	1899
Judd, J. M.	Sippahaw	1901
*Julian, C. A.	Thomasville	1893
Keerans, L. C.	Charlotte	1902
Kelly, J. M.	Durham	1901
*Kent, A. A.	Lenoir	1894
Kerr, J. E.	Pee Dee	1898
King, O. D.	Albemarle	1887
Kirkpatrick, L. R.	Blackstocks, S. C.	1902
Kirkpatrick, W. L.	Crab Tree	1895
Klutz, E. E.	Troutman	1896
*Knight, J. B. H.	Williamston	1891
*Knight, W. P.	Oak Ridge	1898
*Knox, A. W.	Raleigh	1880
*Koonce, S. E.	Pollocksville	1900
Kornegay, Jos. W.	Mt. Olive	1896
Lafferty, J. S.	Concord	1890
Laird, E. C.	Hot Springs	1900
Lamm, I. W.	Lucama	1900
Landis, G. W.	Durham	1901
*Lane, W. K.	Goldsboro	1902
Lane, W. W.	Wilmington	1870
Lauderdale, W. C.	Asheville	1899
*Laughinghouse, C. O'H.	Greenville	1894
Lawing, J. M.	Lincolnton	1887
Laxton. J. L.	Morganton	1891
*Lee, R. E.	Clinton	1900
Leggett, K.	Hobgood	1885
Lewis, G. W.	Frement	1888
Lewis, H. W.	Jackson	1887
*Lewis, R. H.	Raleigh	1877
Lilly, W. H.	Concord	1874

Linville, A. Y.	Salem	1896
Logan, J. E.	Greensboro	1894
Long, F. L.	Catawba	1884
Long, Geo. W.	Graham	1877
Long, J. W.	Salisbury	1884
Long, T. W.	Catawba	1884
Long, H. F.	Statesville	1899
Lott, H. S.	Winston	1888
*Love, Wm. J.	Wilmington	1870
Lumsden, W. J.	Elizabeth City	1888
*Macon, P. J.	Warrenton	1901
Mangum, C. S.	Chapel Hill	1898
*Manning, J. H.	Rocky Mount	1901
Manning, J. M.	Durham	1901
Marsh, J. H.	Fayetteville	1890
*Matheson, J. P.	Taylorsville	1902
*Mathews, J. O.	Taylor's Bridge	1902
Matthews, J. B.	Pittsboro	1899
*Mathews, T. A.	Castalia	1895
Maxwell, G. M.	Davidson	1901
*Maxwell, H. B.	Whiteville	1902
*Meadows, E. B.	Oxford	1901
Mease, G. A.	Canton	1894
Meisenheimer, C. A.	Charlotte	1882
Meisenheimer, T. F.	Morven	1881
Menzies, H. C.	Hickory	1889
Meriwether, F. T., U.S.A.	Asheville	1888
*Miller, R. B.	Rocky Mount	1902
Miller, J. F.	Goldsboro	1873
Mills, R. W.	Troutman	1892
Minor, Chas. L.	Asheville	1898
Monroe, W. A.	Sanford	1888
*Monroe, J. P.	Monroe	1902
Montague, S. J.	Winston	1880
Montgomery, J. C.	Charlotte	1895
Moore, C. E.	Wilson	1875
Moore, Jno. L.	Apex	1901
*Moore, Wm J.	Asheboro	1901
*Moore, E. G.	Elm City	1890
Moore, R. A.	Durham	1893
Moore. J. E.	Sandy Mush	1899
Moran, G. H.	Morganton	1888
Morphew, M. F.	Marion	1893
Morris, E. R.	Asheville	1899
Morris, J. A.	Wilton	1899
*Morton, G. E.	Townsville	1902

Mosley, Chas. W.	Elkin	1896
Morehead, R. P.	Lasker	1900
*Moye, E. A.	Greenville	1897
Munroe, J. P.	Davidson	1890
*Murphy, P. L.	Morganton	1873
Murphy, W. E.	Carr	1895
Myers, J. A.	Lexington	1894
MacRae, Jno. D.	Fayetteville	1899
McAnally, Wm. J.	High Point	1899
McAnnally, Chas. B.	Madison	1896
McBrayer, T. E.	Shelby	1898
McBrayer, L. B.	Asheville	1899
McCain, W. R.	McCain's	1898
McCampbell, John	Morganton	1899
McDonald, A. D.	Wilmington	1879
McDougald, A.	Hope Mills	1888
*McGeachy, R. S.	Raleigh	1895
McGee, J. W.	Raleigh	1885
*McGee, J. W., Jr.	Raleigh	1888
*McIver, Lynn	Sanford	1902
McKee, James	Raleigh	1870
*McKenzie, W. W.,	Salisbury	1894
McLelland, J. R.	Mooresville	1895
McLauchlin, J. E.	Cool Spring	1883
*McLean, J. W.	Cameron	1902
McLean, N. M.	Gibson's Station	1888
*McMillan, B. F.	Plain View	1884
*McMillan, J. A.	Lumberton	1876
*McMillan, J. L.	Red Springs	1902
McMullan, Oscar	Elizabeth City	1889
*McMullan, T. S.	Hertford	1892
*McPhail, L. D.	Rose Hill	1902
McPherson, J. W.	Liberty	1898
*McQueen, A. B.	Raeford	1902
Nelson, R. J.	Robersonville	1893
Newbern, J. M.	Powell's Point	1899
Nichols, C. G.	Roxboro	1891
*Nichols, P. A.	Washington	1901
*Nicholson, J. L.	Richlands	1880
Nicholson, W. H.	Louisburg	1893
*Nicholson, S. T.	Washington	1902
Nixon, E. J.	Wilmington	1900
Noble, R. J.	Selma	1878
*Nobles, J. E.	Greenville	1902
Nisbet, W. O.	Charlotte	1899
O'Donoghue, D.	Charlotte	1887

O'Kelly, J. M.	Williams' Mill	1883
Palmer, R. W.	Gulf	1891
Palmer, J. R.	Hookerton	1900
Paquin, Paul	Asheville	1900
Parker, Jas. R.	Menola	1898
Parris, D. C.	Hillsboro	1887
*Parrott, James M.	Kinston	1896
Parrott, W. T.	Kinston	1901
*Pate, W. T.	Gibson's Station	1885
Patrick, J. E.	Institute	1900
Patterson, A. J.	Liberty	1887
Patterson, R. A.	Aurelian Springs	1887
Payne, R. L.	Norfolk, Va.	1881
*Pendleton, A. S.	Warrenton	1899
Pemberton, W. D	Concord	1887
Pearson, Chas. L.	Asheville	1899
Peavy, J. F.	Asheville	1899
*Perry, M. P.	Macon	1884
Person, J. B., Jr.	Selma	1900
Pfohl, S. F.	Salem	1898
Pharr, T. F.	Concord	1881
Pharr, W. W.	Newell	1885
Picot, L. J.	Littleton	1875
Pollock, Raymond	Kinston	1900
*Poole, C. M.	Craven	1880
Poole, G. M.	Craven	1899
Pope, J. R.	Scotland Neck	1899
*Pope, H. T.	Lumberton	1902
Powell, W. E.	Gastonia	1885
*Pressly, G. W.	Charlotte	1896
*Prince, D. M.	Laurinburg	1879
Pritchard, W. B.	105 W. 73d St. New York City	1884
Ramsaur, George A.	China Grove	1898
Ramsay, J. G.	Salisbury	1855
Rankin, W. S.	Erskine	1901
Ray, John B.	Leaksville	1898
*Ray, J. L.	Burnsville	1890
Reagan, J. A.	Weaversville	1881
Reeves, B. E.	Lamar	1896
*Register, E. C.	Charlotte	1887
Reid, G. P.	Old Fort	1899
Reid, W. K.	Pineville	1896
Reitzel, J. R.	High Point	1896
*Reitzel, C. E.	Liberty	1902
Reynolds, Carl V.	Asheville	1896
Ricks, L. E.	Parmele	1898

Rierson, R. L.	Elks	1898
Rieves, Jas. F.	Julian	1893
Ritter, F. W.	Moyock	1885
*Roberts, Frank	Marshall	1902
Roberson, C. N.	Ascend	1893
Roberson, Chas.	Greensboro	1901
*Robinson, G. J.	Smithfield	1884
*Robinson, M. E.	Goldsboro	1886
Rodgers, W. A.	Franklin	1898
*Rodman, J. C.	Washington	1895
Rodwell, J. W.	Cana	1896
*Rogers, F. O.	Concord	1901
*Royster, H. A.	Raleigh	1895
Royster, W. I.	Raleigh	1871
Ruck, Carl von	Asheville	1891
*Ruck, S. H. von	Asheville	1902
Ruffin, J. K.	Wilson	1860
Russell, E. R.	Charlotte	1898
*Russell, F. H.	Wilmington	1895
Sanderford, J. F.	Creedmore	1891
Sawyer, Chas. J.	Belcross	1897
Sawyer, James	Asheville	1899
Schaub, O. P.	Culler	1898
Seawell, F. H.	Emit	1893
Sevier, J. T.	Asheville	1899
Sevier, D. E.	Asheville	1899
Shaffner, J. F.	Salem	1867
Shamberger, J. B.	Star	1892
*Shell, S. W.	Lenoir	1902
*Shuford, J. H.	Hickory	1902
*Sikes, G. T.	Grissom	1884
*Skinner, L. C.	Greenville	1902
*Skinner, Lewis C.	Davidson	1902
*Sloan, Henry	Ingold	1902
Smith, G. A.	Siler City	1894
*Smith, J. B.	Pilot Mountain	1896
Smith, R. A.	Goldsboro	1882
Smithwick, J. W. P.	LaGrange	1898
*Smoot, J. E.	Concord	1902
Snipes, E. P.	Jonesboro	1890
Spainhower, E. H.	Jolliet	1898
Speight, R. H.	Wrendale	1875
Speight, R. H., Jr.	Wrendale	1901
Spencer, W. O.	Yanceyville	1894
Stafford, W. G.	Burlington	1875
Stamps, Thos.	Lumber Bridge	1888

Stancell, R. H.	Margarettsville	1887
Stansill, J. M.	Rockingham	1880
*Stanton, D. A.	High Point	1891
Staton, L. L.	Tarboro	1900
Steele, W. T.	Mt. Olive	1894
Steele, J. A.	Rockingham	1899
Stevens, J. A.	Clinton	1883
Stevens, M. L.	Asheville	1893
Stevens, S. A.	Monroe	1898
Stewart, J. F.	Simpson's Store	1898
*Stokes, J. Ernest	Salisbury	1901
*Street, M. E.	Glendon	1902
Strickland, E. F.	Bethania	1893
Springfield, Thomas	Waynesville	1899
Strong, C. M.	Charlotte	1898
Stroud, O. B.	Ore Hill	1894
Summerell, E. M.	Mill Bridge	1883
Summers, Chas. L.	Winston	1896
Sutton, W. G.	Winston	1896
Sweeney, John	Leaksville	1890
Swett, Wm. P.	Southern Pines	1901
*Tate, W. N.	Mebane	1900
*Tayloe, D. T.	Washington	1885
Tayloe, J. W.	Union	1900
Taylor, I. M.	Morganton	1883
Taylor, W. L.	Mt. Airy	1894
*Taylor, W. L.	Stovall	1902
Teague, W. L.	Roxboro	1898
Tennent, G. S.	Asheville	1898
Thames, John	Greesboro	1895
Thigpen, Wm. J.	Tarboro	1901
*Thomas, Geo. Gillett	Wilmington	1871
Thomas, Robt. B.	Newbern	1898
Thomas, R. W.	Thomasville	1880
*Thomas, P. J.	Wilmington	1902
Trantham, H. T.	Salisbury	1879
Tucker, H. McK.	Raleigh	1899
Tull, H. McK.	Kinston	1876
Turlington, W. T.	Fremont	1892
Turner, J. A.	High Point	1891
Utley, B. S.	Holly Springs	1886
Utley, H. G.	Maxton	1901
Van Bergen, Chas.	Asheville	1899
Vestal, W. J.	Tyro Shops	1893
*Wakefield, W. H.	Charlotte	1893
Waldrop, J. G.	Hendersonville	1861

Walker, C. E.	Charlotte	1894
*Walker, H. D.	Creswell	1902
*Walton, J. C.	Reidsville	1879
Ward, W. H.	Plymouth	1900
*Washam, W. W.	Davidson	1902
Watson, D. I.	Southport	1891
*Way, J. Howell	Waynesville	1887
Weaver, H. B.	Asheville	1881
Wessell, J. C.	Wilmington	1900
West, G. H.	Newton	1894
Wharton, L. D.	Smithfield	1892
Whisnant, A. M.	Charlotte	1899
Whitaker, R. A.	Trenton	1889
White, Thos. M.	Belvidere	1901
Whitehead, John	Salisbury	1880
*Whitehead, W. H.	Rocky Mount	1875
Whitehead, R. H.	Chapel Hill	1898
Whitehead, J. P.	Rocky Mount	1899
White, J. W.	Wilkesboro	1890
Whiteside, R. F.	Hickory	1881
Whitfield, W. C.	Quinerly	1884
Whitley, D. P.	Millingpost	1898
Whittington, W. W.	Bullhead	1902
*Whittington, W. P.	Asheville	1897
Williams, H. C.	Sanford	1893
Williams, J. H.	Asheville	1881
Williams, J. A.	Prospect Hill	1898
Williams, J. D.	Lewisville	1898
*Williams, T. B.	Ridgeway	1893
*Williams, J. M.	Warsaw	1902
Wilson, A. R.	Greensboro	1882
Wilson, F. G.	Gastonia	1899
Winston, A. R.	Franklinton	1900
*Wiseman, C. B.	Henrietta	1902
*Withers, S. M.	Davidson	1902
Wood, J. H.	Scotland Neck	1900
Woodcock, J. H.	Asheville	1899
Woody, S. P.	Spring Creek	1898
Wooten, W. H.	Davidson	1898
Wright, S. P.	Wilmington	1892
*Wright, J. B.	Granite Fallls	1899
Wynn, T. P.	Tarboro	1888
Yarboro, R. F.	Louisburg	1899
*Young, R. S.	Concord	1882
Young, W. D.	Durham	1901
*Yount, E. McD.	Conover	1902

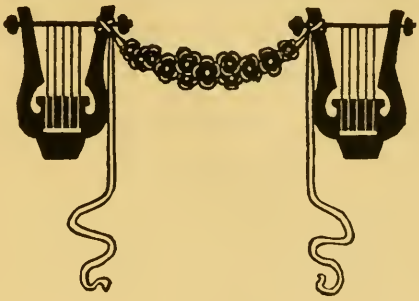
HONORARY FELLOWS.

J. M. Lawing.....Lincolnton
J. G. Ramsay.....Salisbury
Peter E. Hines.....Raleigh
W. J. Jones.....Goldsboro
J. W. Jones.....Tarboro
J. K. Ruffin.....Wilson
P. A. Barrier.....Mt. Pleasant
J. F. Shaffner.....Salem
F. J. Haywood.....Raleigh
B. P. Alston.....Henderson
H. T. Bahnson.....Salem
Wm. J. Love.....Wilmington
W. W. Lane.....Wilmington
Jas. McKee.....Raleigh
Willis Alston.....Littleton
W. J. H. Bellamy.....Wilmington
J. F. Beall.....Linwood
W. I. Royster.....Raleigh
*Geo. G. Thomas.....Wilmington
Francis Duffy.....Newbern

HONORARY MEMBERS.

Dr. L. McL. Tiffany.....Baltimore, Md.
Dr. W. T. Howard.....Baltimore, Md.
Dr. W. W. Keen.....Philadelphia
Dr. W. L. Robinson.....Danville, Va.
Dr. J. Allison Hodges.....Richmond, Va.

IN MEMORIAM



Joseph H. Baker
J. M. Hadley
R. W. Thomas
G. W. Fletcher

In Cælo Quies